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Volume XXVI Number 4 April 1950

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FRANK J. REILLY, Editor

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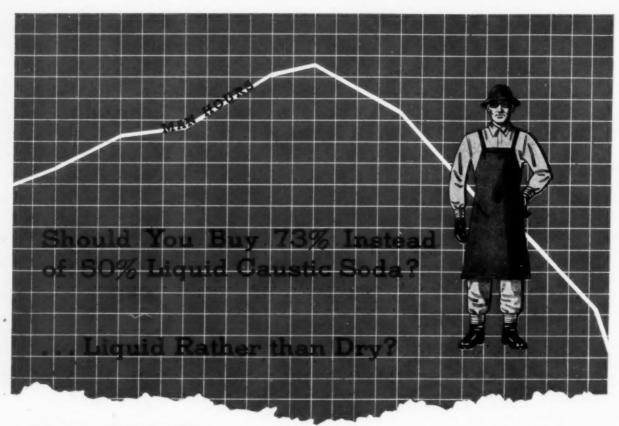
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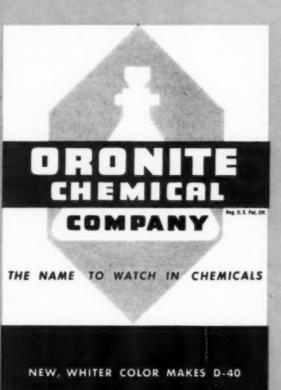
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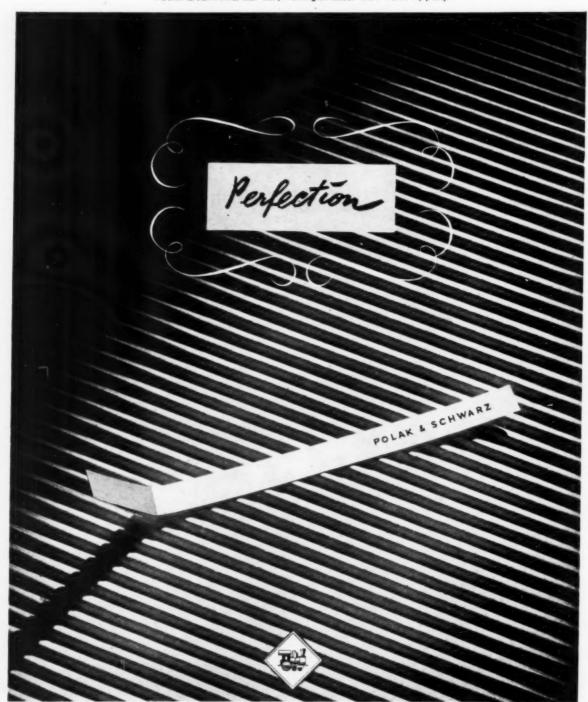
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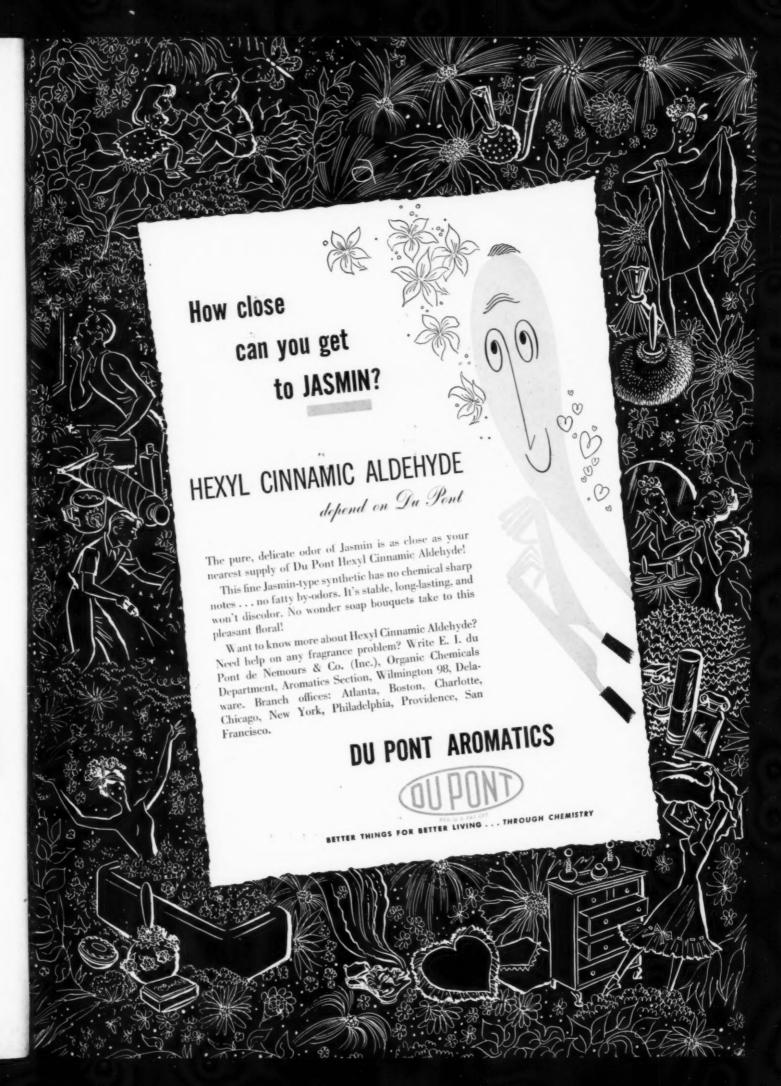
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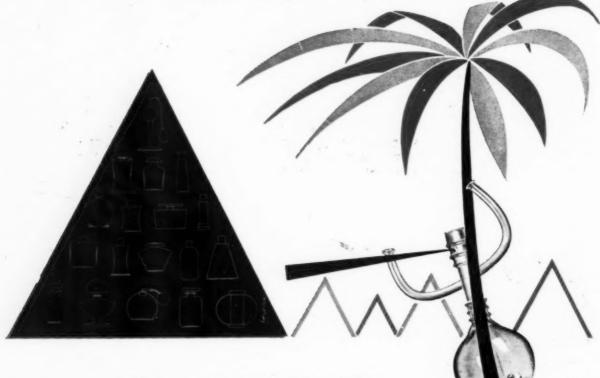
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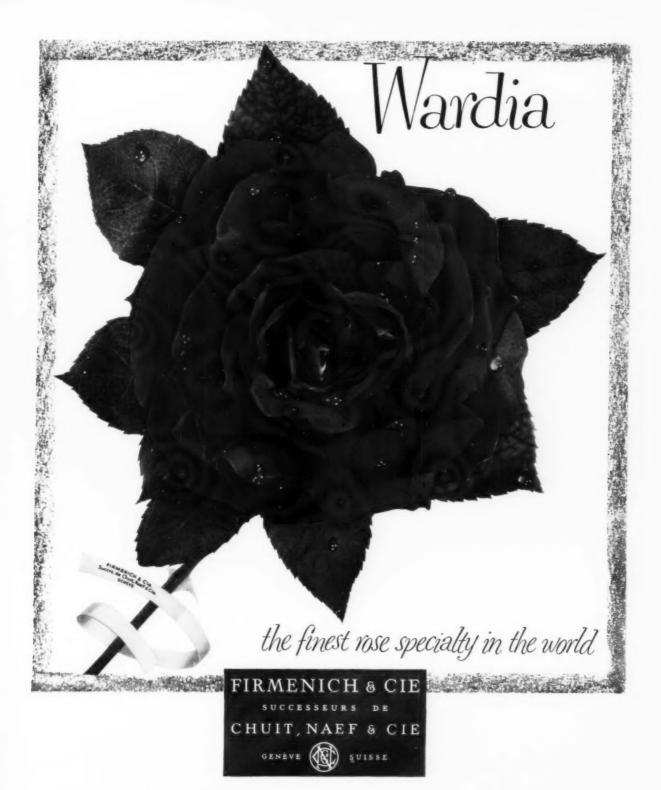


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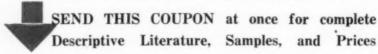
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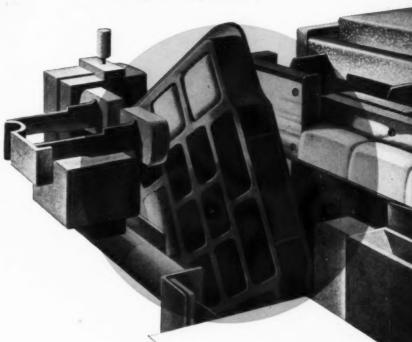


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Many soap-making operations were done by hand; so were some of the processes involved in paper, textile and glass manufacturing as well as water purification and sewage treatment.

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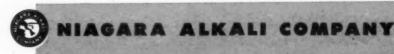
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yourself these questions

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For especially light colored products, we recommend the use of our White Oleic Acid, which is in a color class by itself.

1020 Crystolene (White Oleic Acid) 6-8°C Titre

✓ is distillation of stearic acid enough?

Since the beginning of the fatty acid industry, producers have relied upon distillation as the means of purifying fatty acids for the production of Stearic Acid.

Distillation is not enough to remove the impurities from the fatty acids. The average commercial Stearic Acid shows this by its relatively dark color, and poor odor and color stability when it is used in making esters and high grade cosmetic soaps and creams.

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To produce highest quality esters, soaps and cosmetic preparations, use our Stearic Acids . . . generous testing samples will show you why.

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ESTABLISHED 1926

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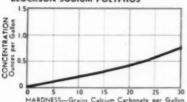
Say you saw it in SOAP!

April, 1950

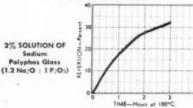


EMPIRICAL FORMULA: NajzPio03 COMPOSITION: 1.2 Na₂0:1 P₂0s STRENGTH: P205 63.5% pH of 1% solution is 7.2 SOLUBILITY: 150 parts in 100 parts of water at 75° F

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clothes so much whiter and cleaner, adds so much extra sparkle to china and silver—and why so many compounders and manufacturers now specify this stable, free-rinsing suds-booster and soap-saver for their leading detergents.

WATER SOFTENING-

SEQUESTRATION Precipitation of calcium and magnesium salts, which normally occurs with increased tem-perature or alkalinity, is inhibited when minute quantities of Sodium Polyphos are added to hard water. Larger additions prevent precipitation by forming inert complexes* with the hardness ele ments. Precipitates already formed will re-dissolve. These complexes won't react with soap added to cleaning bath or formed by saponification of greases and oils by alkaline detergents. Sticky, fabric-enmeshing and equipment-clogging soap curds are avoided. THUS SODIUM POLY-PHOS IS A VALUABLE ADJUNCT TO EVERY DETERGENT OPERATION.

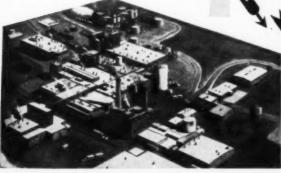
*Also forms inert complexes with metallic ions of iron, copper, nickel, manganese and zinc.

DISPERSION - Sodium Polyphos exhibits to a remarkable degree the property of increasing dispersion of finely divided solids in a liquid medium. Typical applications include: dispersion of clay for coating papers, reducing vis-cosity of muds for drilling oil wells, water suspension of organic pigments. These, and the listing below, may suggest experimental application to your own particular problem.

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- · Disodium Phosphate, Crystalline
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all 10 floors
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so good!



NOW! A new feature is added to this conditioner-cleaner

CHLOROPHYL in AIR-FRESHENING ODOR

In one cleaning-conditioning operation the floor surface becomes a giant dispenser that freshens the atmosphere throughout the entire room area. Literature available upon request.

Listed by Underwriters' Laboratories, Inc., as anti-slip floor treatment material.



Yes, all floors respond to this amazing CONDITIONER-CLEANER with original lustrous beauty and safety. Deeply imbedded dirt, dulling soap film and scum encrusted floors become dazzling clean—completely revitalized!

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It's powerful . . . effective in dilutions as low as 3% in hard, soft, hot or even ice water. It's absolutely safe for the most delicate surface. In fact, harsh alkalies on the floor are neutralized.

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PAINTED

Put it down . . . then take it up! Labor's dollar cost shrinks to mere pennies. Try it once and you will never rinse again.

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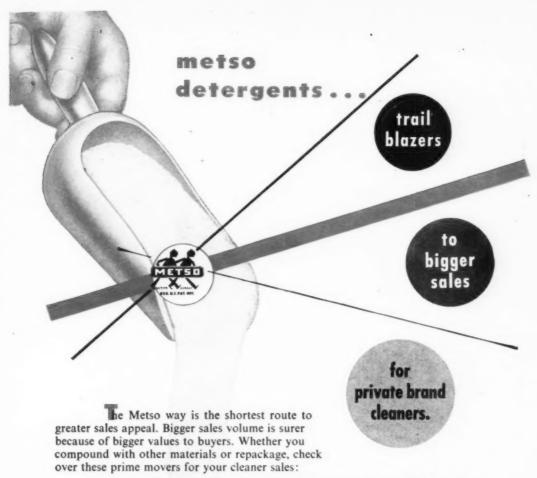
It is listed by Underwriters' Laboratories Inc., as ANTI-SLIP floor treatment material. This CONDI-TIONER-CLEANER creates a slip resistant surface for your slip-resistant wax. Enjoy greater safety underfoot. A free sample and informative literature is yours for the asking. Write us today.



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Manufacturers of quality waxes, soaps, cleaners, disinfectants, chemical specialties.

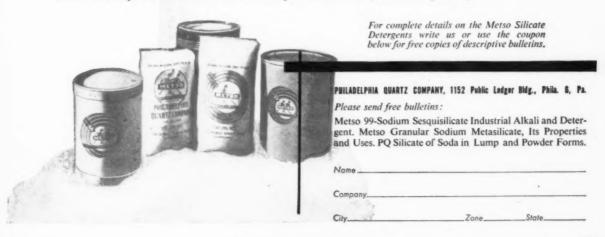


Appearance. Metso Detergents are uniformly attractive—free flowing, clean, white. They are of the same good quality shipment after shipment.

Physical Properties. Metso Detergents are freely soluble in hot or cold water to produce alkaline solutions. They contain properly balanced soluble silica (SiO₂). This unique chemical together with alkaline power steps up washing action and removes more dirt. Equally important in cleaning operations is the ability of soluble silica to prevent dirt from redepositing or resoiling clean work.

Good mixtures. Compatible in mixtures with materials such as other alkalis, soap, synthetic detergents, complex phosphates.

Conveniently packed. In paper bags containing 100 pounds; veneer drums of 100 pounds or the attractive Leverpak fibre drums (300 to 325 pounds).



Now Available . . . "SOAPS and DETERGENTS"

by E. G. Thomssen and J. W. McCutcheon

CONTENTS

Chapter 1—RAW MATERIALS—Fats, oils, fatty acids, alkalis, builders, etc. Methods and processes involved in fat and oil processing, refining, bleaching, etc.; fat splitting, saponification, hydrogenation, etc.

Chapter 2—MACHINERY AND EQUIP-MENT—Types and uses of soap plant equipment. Selection of equipment as to material of construction, safety, capacity and efficiency.

Chapter 3—SOAP MAKING METHODS— Practical description of soap making processes, full boiled, semi-boiled cold process, potash soaps, spray processes, etc.

Chapter 4— SOAP PRODUCTS — Every known type of soap is described, considering raw materials, manufacture, characteristics, uses, etc.

Chapter 5—PERFUMING & COLORING SOAP—Action of soap or alkali, light and air on some of the common aromatics. Classification of perfumes.

Chapter 6—GLYCERINE RECOVERY AND REFINING—Recovery methods for glycerine. Continuous glycerine distillation. Fat splitting methods, fatty acids distillation and refining, and allied processes.

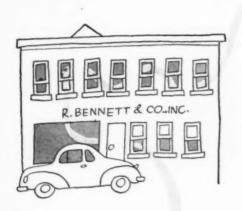
Chapter 7—SYNTHETIC DETERGENTS— Alcohol sulfates, alkyl aryl sulfates, alkyl sulfonates, sulfated sulfonated amides, esters, and amines. Evaluation and classification of the detergents.

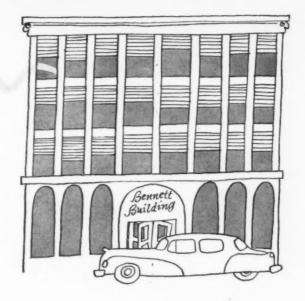
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APPENDIX

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Enclosed is our check for \$9.00 (Fo	reign and Canada \$9.50) covering a copy of SOAPS AND DETERGENTS.
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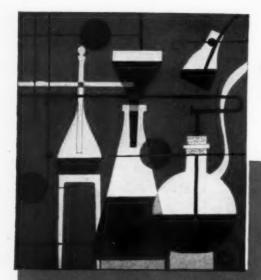
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ALPHA AMYL

CINNAMIC ALDEHYDE

STABLE—Free from odors caused by impurities, Verona chemicals carry through the life of your products without undesirable change in character.

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AROMATICS DIVISION

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It takes QUADRAFOS to bring out all the hidden cleaning power of water. Just a little added to your compounds will give your customers truly marvelous results, with a speed and ease they never thought possible. QUADRAFOS brings the hardest water right down to zero softness, gets underneath every spot of soil, loosens it completely, and breaks it up into tiny particles that float easily and quickly down the drain. Even the stubbornest grease can't hang on against the powerful action of QUADRAFOS, and there's never any grimy re-depositing on materials or equipment . . . Know more about how QUADRAFOS aids the fast, thorough cleaning that builds profitable customer-satisfaction. The coupon will bring you full particulars.

softens water without precipitation . . . deflocculates ... redissolves precipitates . . . promotes free rinsing

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Sequestration of calcium,	Dispersion of soil	Address	
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Regeneration of lime soap		City	Zone State

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Specialists in Automatic Soap Presses

Type K Simplex Press

For toilet or laundry saap cakes of any shape (except highly convex cakes) with side band. Speeds of 120-140 cakes per minute. Tones Presses, with their exclusive, patented toggle motion, have become the standard throughout the world wherever high production, high quality, and perfection of finish are paramount considerations.

Standard Jones Presses illustrated here meet all soap pressing requirements. A Jones Toggle Operated Soap Press will improve the appearance of your product, increase your production, reduce your costs. Write today for complete information.

Type K Duplex Press

Applications same as Type K Simplex. Presses two cakes simultaneously. Speeds up to 250 cakes per minute,

Type R Pin Die Press

For toilet soap cakes of unusual shape, oval cakes, or cakes having highly convex faces, with or without side band. Speeds up to 100 cakes per minute.



Type ET Press

For small toilet soap cakes with side band. Speeds up to 120 cakes per minute.

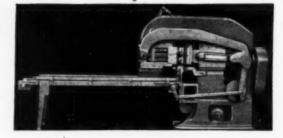
Type F Press

For large toilet or laundry soap cakes, Available in Simplex or Duplex Models, pressing one or two cakes per stroke,



Type E Press

For small toilet soap cakes (1½ oz. or less). Speeds up to 200 cakes per minute.



R. A. JONES & COMPANY, INC.

P. O. Box 485

CINCINNATI, OHIO

MANUFACTURERS OF JONES TOGGLE OPERATED SOAP PRESSES AND JONES CONSTANT MOTION CARTONERS

AS THE DITOR SEES IT

N spite of the broad progress which synthetic detergents have made over the past few years, their current marketing is not without criticism of some products. Looking only at the small-package field for the moment, we find that complaints run the gamut of those for all washing agents, some justified and some not. But the criticism which seems to appear most often is that of unpleasant odor. A number of products emit oil-like and other effluvia which in no way resemble Chanel No. 5. And many users don't like it.

To the technical worker, such odors might be of no consequence, but to the small-package user of synthetic washing agents, such by-odors dispel thoughts of purity and cleanliness with which the material is supposed to be associated. To tell Mrs. McSwat that these odors are meaningless and to ignore them, is to tell her in vain. Some products do a good job of solving the problem with covering perfumes. That these must be unobjectionable in the hot water of the dishpan as well as the clothes tub would seem to be obvious. From reports which we receive, these covering perfumes are effective. But, there are still any number of products which have not as yet solved this problem. Whether they are making the attempt at solution, we do not know, but we do believe that they must find the answer or run into increasing sales resistance in the smallpackage field.



ARY SHERIDAN writes a syndicated column, "Your Money's Worth," which appears in numerous newspapers particularly throughout the great mid-west farm belt. Now and then, Mary pops up with some good horse-sense about soaps and detergents, comments which although couched always in mild and ladylike terms, nevertheless carry a punch. Recently, in commenting on "no-rinse"

detergents, she mentioned that for dishes and glassware they had been found eminently satisfactory. But for clothes washing, quotes Mary: ".... I find myself psychologically unable to take a chance on not rinsing, and my fellow housewives agree."

Just a quiet little note by a lady columnist, but in our humble opinion, she hit it squarely on the button. The idea behind "no-rinse" advertising is psychologically unacceptable. Nobody wants to leave the wash water with its content of removed soil to dry in the washed clothes. Whether the advertising geniuses of the soap industry or the apparently coked-up copy writers of their agencies know it or not, the idea of rinsing to flush away suspended soil is deep seated in the mind of the housewife. Also, it would seem, in the minds of the makers of clothes washing machines.

From whence sprung this "no-rinse" idea, we neither know nor care. We feel that its sales appeal is about zero irrespective of the composition or merits of the products offered for such use. With Mary Sheridan who put the finger on it with such ladylike delicacy in her column, we agree fully.



Several soapers and some of the large chains, we note with interest, have been marketing toilet soap recently in a so-called "bulk" pack. The individually unwrapped cakes merely are packaged loose in a transparent bag, usually six or a dozen to the package. The obvious object of this "bulk" pack is economy, an idea quite in keeping with present thoughts of soap marketers. When they leave the factory or if they are not handled too much, the economy packages present a very attractive appearance in addition to saving the customer money.

Unfortunately, however, soap receives considerable handling and banging around from the

time it is shipped from the plant until it is put out on the display counters in the grocery store. Furthermore, edges tend to dry out and become brittle. This combination usually brings a mussy-looking package of soap for the customer to glimpse. That fresh, clean-cut appearance is lacking. The goods look shopworn before they reach the store shelf. Chips and powder from the dry soap cake edges sift to the bottom of the package and remain there unsightly for all to view. One soaper while stressing the purity and economy of his soap, neverthless apologizes for its appearance via an enclosed printed slip.

If toilet soap cakes, soft and unctuous when they leave the press, could remain thus, the problem of chipping and cracking would not arise. But, they always tend to dry out, become brittle. This is why we have wondered why this type of package was chosen to market cake soap any more than a fragile flake. Some of the old ideas in soap packaging are not so bad after all, even though new ideas seem to have more sales punch, — that is new ideas if they work.



N SPITE of outward tranquility, the soap monopoly bee is still buzzing around behind scenes in the hallowed halls of Washington, D. C. And the political bloodhounds, we hear, are still sniffing hither and yon in an effort to run down something in the way of evidence to substantiate their ideas of monopoly. Lacking any such specific evidence they may be forced to fall back on that good old leftist contention that bigness in itself is monopolistic. This latter approach well might happen in view of the fact that for the past ten years it seems, attempts to find a handy hook on which to hang a monopoly charge against the soap industry or any part of it obviously have been without success.

For the large soapers, we hold no candle. Over the years, they have been tough competition for everybody, but mostly for each other. Upon occasion, it has seemed to us that they have beaten their brains out in unnecessary and costly competitive dog-fights. But, be this as it may, the big fellows and their smaller competitors too have supplied the American public right along with good soaps at the lowest prices in the world. And with it all, we have not noted any smaller soapers starving to death over the years. In fact, one small soaper,—the only one we have ever heard scream "monopoly" in Washington,—is reported to have done exceedingly well financially while being trampled under foot by the "soap monopoly."

So with a monopoly charge against the big soapers appearing to wear thinner as time goes on, the next move to break some congressman into the news may be an assault against one of them on the basis of bigness. Politics is funny business. So who will be the lucky one? Don't tell. Let's all guess.



ECENT advances in prices of fats and oils have brought them to the highest levels in many months. Tallow seems to be the exception to the general trend, its price not having changed materially for some six weeks. With coconut oil at 153/4 cents a pound, plus processing tax and transportation from the Pacific Coast, the traditional differential between tallow and coconut oil is stretched beyond recognition.

With coconut oil and all other vegetable oils at the year's highest levels, and some as much as 33-1/3 percent above prices of a year ago, the need for supporting prices as suggested in the recently issued report of the Gillette Agricultural Subcommittee would seem altogether unnecessary. Fat and oil prices appear to be feeling the effect of increased commodity speculation, government purchases, stockpiling particularly of such oils as coconut and palm, continued high domestic demand, and export shipments.

The problem for the soaper to solve today is whether or not to buy more tallow at the current level, a price incidentally which seems far too low in comparison with the cost of vegetable oils and other commodities, or to sit back and hope for prices to decline. In the meantime, he also would do well to turn over in his mind what he is going to use—if anything—to reduce his requirements for expensive coconut oil. Quite a puzzle, indeed! However, plain horse sense, we believe, still calls for full tallow tanks at today's prices.

HE surface-active fatty alkylolamides represent probably the one basic and original American contribution to synthetic detergent chemistry. It is rather odd that under those circumstances there is very

methyl 1,3-propanediol, trihydroxymethyl aminomethane, etc.

This type of reaction (II) permits the preparation of a wide range of products. Aside from the obvious possibility of selecting different comat 10 per cent concentration has only a few per cent more free fatty acid than the other. Because of striking variations of this sort in commercial

Fatty Alkylolamides in Soap

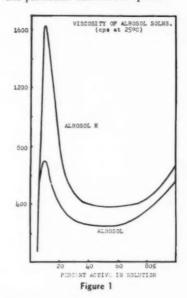
fatty alkylolamides are, however, very widely used, most commonly in conjunction with other detergents and wetting agents.

These products were invented by the late Dr. Wolf Kritchevsky, of Chicago, who made the rather interesting observation that while the condensation products (1) of equimolar quantities of fatty acid and alkylolamine, so as to remove water, were generally water-insoluble, and possessed relatively unimportant surfaceactive properties, the product (II) obtained by reacting fatty acid with an excess of alkylolamine was now watersoluble or dispersible and exhibited very powerful foaming, wetting and detergent properties:

with diethanolamine as preferred raw materials, and these will be treated exclusively in this discussion. The products are viscous amber liquids soluble in water and organic solvents, mildly alkaline in pH and generally sold as concentrates. Nevertheless, the commercial products differ considerably in behavior due to rather small differences in manufacturing procedure and fatty acid specifications.

An interesting property of the fatty alkylolamides is illustrated in Figure I: on diluting with water the viscous concentrate thins out but on further dilution thickens up again reaching a maximum viscosity at 10 per cent concentration. The two fatty alkylolamides indicated are made from the same raw materials in the same proportions; they differ only in com-

products, it should be pointed out that the data to be presented, while probably applicable in large part to all commercial fatty alkylolamides, pertain to



Chemistry of Alkylolamides

HE chemistry of these products Thas never been fully elucidated. Unlike other surface-active agents, the fatty alkylolamides are not readily classified as individual chemical compounds. Formula II above is an obvious oversimplification, for the commercial products sometimes contain as

R'COOH+HNRR→R'CONRR+H:O (I) R'COOH+ n+1 HNRR→ (R'CONRR) n. HNRR+H-O (II)

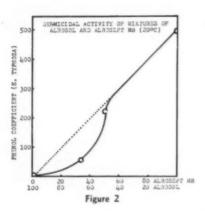
Alkylolamines which may be used in this reaction include monoethanolamine, diethanolamine, isopropanolamine, diglycerylamine, 2-amino 2-

pleteness of reaction. The product producing the more viscous solution

By H. W. Zussman and Robert Bernstein*

Alrose Chemical Company

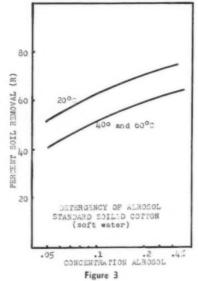
A paper presented at the annual meeting, Chemical Specialties Manufacturers Assn., Washington, D. C., Dec. 5, 1949.



much as 16 per cent free fatty acid or 24 per cent expressed as soap. Free amine, unreacted and uncombined as soap, is also present; this amine may be titrated or readily extracted with dilute acid from a solution of the product in a water-immiscible solvent. Esters and other side reaction products are probably also present. Thus, these materials appear to be mixtures of fatty acid, alkylolamine and equimolar condensate (I) of fatty acid and alkylolamine. Yet it is not possible to make a useful surface-active product by merely mixing these three components together. Dr. Kroll, in our laboratories some years ago, found that these three components had to be heated together to produce the desired complex of properties; nevertheless, there was no evidence of any chemical reaction. Kroll theorized that the untreated mixture represented a liquid-liquid dispersion of randomly oriented equimolar alkylolamide (I) molecules in a solvent composed of amine with some fatty acid. On heating, a liquid-liquid solution was obtained with the components now more strongly oriented with respect to each other. In short, the observed surface-activity is due to some form of molecular association.

A frequent question asked about these products is: What are they—cationic, nonionic or anionic? The surface-active alkylolamides again do not fit into any too rigid classification. On the one hand they bear a certain kinship to the soaps and, on the other hand, they resemble the cationic softening agents used as textile fiber lubricants. The battery test indicates that the fatty alkylolamides are mildly cationic at acid pHs, and mildly

anionic at alkaline pHs, but they exhibit excellent compatibilities with either anionic or cationic agents regardless of pH and should, therefore, be classified with the nonionics. In many cases, such mixtures containing fatty alkylolamides show enhanced



surface-active properties. Figure 2 illustrates graphically the germicidal action of mixtures of fatty alkylolamide with "Alrosept MB" (tridecyl benzyl hyd:oxyethyl imidazolinium chloride).

The behavior of the fatty amide in these mixtures is typical of that observed with polyethyleneoxide compounds which, likewise, show an inhibitory effect on quaternaries in mixtures in which the nonionic predominates. The dotted line in Figure 2, incidentally, represents the theoretical results that might be expected with mixtures of quaternary ammonium compound with a perfectly inert material.

Other Properties

THE fatty alkylolamides exhibit other properties in common with the polyethyleneoxide derivatives. They

are non-germicidal; they are completely organic; they are soluble in all polar and semi-polar organic solvents. While the polyethyleneoxide nonionics show the peculiar property of inverse solubility—i. e., better solubility at low temperatures than at high temperatures—the fatty alkylolamides yield clear solutions at elevated temperatures. These products are, however, not without their peculiar solubility properties. While water solutions of two per cent concentration or higher

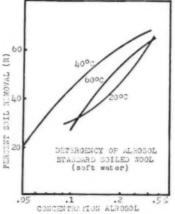


Figure 4

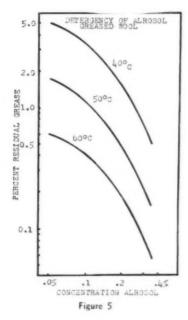
are clear, solutions at lower concentrations are turbid. This behavior is another indication that the alkylolamides are multi-component systems, for it is reminiscent of the phenomenon of solubilization. A concentrated sulfonated oil solution, for example, will dissolve a given amount of otherwise water-insoluble material, such as pine oil, to form a clear solution; on dilution, however, the originally solubilized material will separate out, forming an oil or milky emulsion.

Another peculiarity of the fatty amides is their unexpectedly poor resistance to electrolyte. They are readily salted out in the presence of low concentrations of salt, acid or alkali, yet it is rather surprising to find that these products are among the

Cited as perhaps the "one basic, original American contribution to synthetic detergent chemistry," fatty alkylolamides are finding wide use, mainly with other types of surface active agents.

very few materials which will substantially reduce the surface tension of saturated brines. The solubility of the fatty amides in the presence of electrolytes may be improved considerably by the use of a variety of surface-active coupling agents, among the most effective of which are many of the salt free alkyl aryl sulfonates.

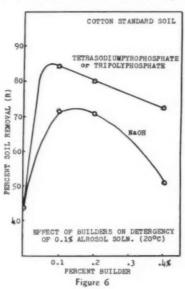
In other respects the fatty alkylolamides by themselves do not exhibit any particularly dramatic properties. The behavior of these materials as detergents is summarized in Figures 3, 4 and 5. The soils used in obtaining the data in Figures 3 and 4 are the so-called "standard soils" consisting of a mixture of carbon black with mineral oil. Washing was done in the usual manner in a launderometer and carbon black removal calculated



from reflectance measurements on the washed fabrics. These data are presented, incidentally, to indicate the effect of the substrate surface on soil removal efficiency of the detergent. With this particular soil the fatty alkylolamide appears to produce better results when used on cotton than on wool; this behavior is somewhat different from that noticed with most other synthetic detergents. There also appears to be a very definite optimum temperature for maximum soil removal efficiency.

Figures 4 and 5 compare the ef-

fects obtained when using the same type of substrate but varying the soil. Figure 5 pertains to a series of experiments in which natural greased wool was scoured using varying concentrations of detergent at different temperatures; residual grease was determined by extraction. In this case detergency improves as the temperature increases, while with carbon black soils, maximum detergency is obtained at relatively moderate temperatures. In the former case, emulsification presumably is the predominant process and the increase in temperature which aids the liquefaction of the grease also aids in its removal from the wool. In the latter case, the predominant process is presumably dispersion, which need not necessa:ily be influenced by the same factors effective in the case of emulsification. Practical experience with real soils of this type, such as graphite, also indicates that best results are obtained at moderate temperatures. It might also be mentioned that the fatty alkylolamides differ from most syn-



thetic detergents in showing very little soil redeposition.

Effect of Builders

THE effect of builders on the detergent properties of the fatty alkylolamides, again with reference to carbon black "standard soil" used on cotton, is illustrated in Figures 6 and 7. Too much builder is apparently not entirely desirable. At the indicated

concentration of 0.1 per cent alkyloamide, best results are obtained when the builder does not exceed the concentration of the detergent; at lower concentrations of detergent, more builder may probably be used effectively.

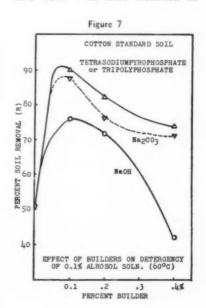
As indicated earlier, the fatty alkylolamides are used most commonly in conjunction with other surface-active agents. An examination of combinations of alkylolamide with soap is of special interest at this time and will be considered in detail.

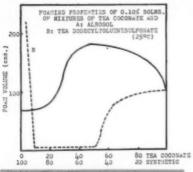
I. Foaming properties

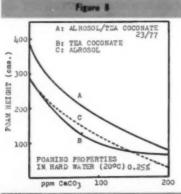
The foaming action of coconut soap and triethanolamine dodecyltoluene sulfonate is completely cancelled in mixtures containing five to 50 per cent soap. However, substantial increases in foam are obtained by mixing fatty alkylolamide with soap. Thus, while either component alone produces only 100 cc. of foam or less at 0.1 per cent concentration on the shake test, a 50-50 mixture of the two produces almost twice as much foam as either component alone (Figure 8). This enhancement in foaming action of mixtures of coconut soap and fatty alkylolamide is also maintained in hard water (Figure 9).

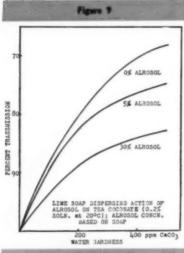
II. Hard water compatibility

The fatty alkylolamides show only a slight increase in turbidity in hard water with some reduction in









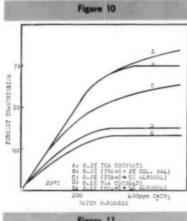


Figure 11

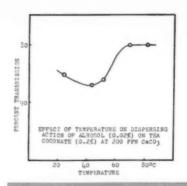
foam and detergency under these conditions in the absence of builders; yet the fatty alkylolamides have a very powerful dispersing or solubilizing action on lime soaps. A soap in hard water will precipitate either as a very fine or coarse curd. The extent of this precipitation is readily measured as a decrease in transmission of light. A 0.2 per cent solution of triethanolamine coconate in distilled water transmits all incident light. In water of 500 ppm calcium carbonate it transmits only 66.5 per cent of the incident light; under these conditions practically all the soap is precipitated. In the presence of alkylolamide (Figure 10) the transmission of the soap solution in hard water is increasedi.e., the synthetic prevents the precipitation of the calcium soap. At 0.01 per cent concentration in a 0.2 per cent soap solution, the fatty alkylolamide is solubilizing five times its own weight of soap. The synthetic does not bind calcium as does a chelating agent; it merely retards the formation of calcium soap crystals. In due time (a matter of days or weeks) the calcium soap will precipitate completely. However, the alkylolamide retards this process sufficiently well to be of value during rinse operations. Like many other dispersing and solubilizing phenomena, the dispersing of lime soaps by alkylolamide is maximum at moderate temperatures (Figure 12).

III. Detergency

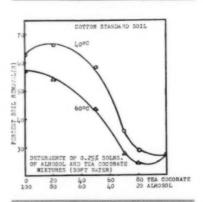
Investigation of the cleaning properties of mixtures of fatty alkylolamide with soaps indicates that a variety of effects may be produced depending on the type of soap used.

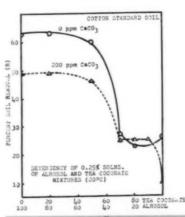
In the case of coconut soaps (Figure 13), the addition of a small amount of soap to the fatty alkylolamide at 20° and 40°C. has a mild boosting effect, while the addition of small amounts of alkylolamide to the soap has little effect in soft water. At 60°C. the addition of a small amount of alkylolamide to the soap has a mild inhibitory effect on detergency. In hard water (Figure 14), the addition of alkylolamide in small amounts to the soap is beneficial.

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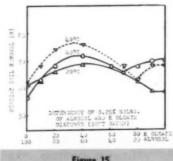


Figure 15

TRANSPARENT SOAPS

By Milton A. Lesser

oft SO long ago it seemed that transparent soaps—often called glycerine soaps—had been relegated to the limbo of forgotten products. Indeed, in 1942, one authority (1) remarked that transparent soaps or glycerine soaps were "almost obsolete." Then one day last year it became quite apparent that these soaps were again appearing in quantity on store shelves and that they had come into favor with a lot of people, including many young folks who had never before used these quite elegant but rather old fashioned products.

At least two brand names ("White Rose Transparent Glycerine Soap" and "Pear's Soap"), long familiar to an older generation, are now making themselves known to a newer group. One of these soaps, an English product which is said (2) to have been developed over two centuries ago, was reintroduced into the American market after an absence of nearly nine years. It was withdrawn from the market because of wartime glycerine shortages. In addition, department stores report that their own brands of transparent soap are selling well. As a matter of fact it has been stated (3) that in one of New York's largest stores transparent soaps outsell all other soaps.

Transparent soaps are being aggressively merchandised as quality products. Thus the manufacturer of a well-known American product stresses the soap's satisfying quantities of rich lather and its exceptional cleansing qualities. A similar quality theme is being used to sell the imported product. However, a nostalgic air is also being created in the advertising copy. This is based on the return of an old friend—one that was welcomed and widely appreciated in a calmer, more pleasant era.

In the past, transparency in a

soap was considered an index of purity. However, as a number of writers (4, 5) have taken pains to point out, transparency is actually no indication whatever of purity or quality. Soap makers readily concede that this is the case but, as remarked by Fisher, (6) the cost of making a good transparent soap puts it, more or less, in a luxury class. Also noteworthy in this connection is Hurst's (7) observation that it is by no means easy to make transparent soap. He stresses that it requires a good deal of practice and experience in order to turn out a perfect product.

It is the opinion of Thomssen and McCutcheon (8) that the method of making transparent soaps was discovered when white, thoroughly dried settled soap chips were dissolved in about an equal weight of alcohol. Part of the alcohol was then driven off. When the soap was dried out sufficiently and a drop of the liquid thus obtained quickly solidified into a hard mass, a transparent soap was formed. Whatever may have been the original process, it is definite that numerous modifications were made in methods and materials in the many decades since the first product was developed. The patent literature of the last century or so provides many examples of improvements and variations in manufacture.

It is only within comparatively modern times, however, that any real work was done to determine the causes of the transparency. Of course, certain facts had been learned empirically. It had long been known, for example, that the rate of cooling greatly influences transparency; slow cooling yielding a more opaque product, rapid cooling gave a clearer one.

In 1908, Richardson (9) showed that transparent soap consists of a supercooled or supersaturated solid solution in which crystallization has not yet set in. A decade later, this view was supported by Alexander's (10) ultramicroscopic studies. He found that slow cooling could produce large distinct crystals in a clear matrix which cause the soap to appear opaque. Rapid cooling does not permit the formation of these large crystals.

Much more recently, a group of Russian workers (11) have also reported studies which confirm Richardson's conclusions. Using a polarizing microscope, these investigators found that the glassy condition of glycerine - containing or transparent soaps is due to inhibition of the usual crystallization of the fatty acid salts. In their opinion, the soap represents a metastable system resembling a supercooled melt. They pointed out that crystallization may occur as a result of warming the soap or as a result of selecting an unsuitable fat stock. They also made the significant observation that transparency can be obtained by

Transparency in soap, once considered an index of purity, still has an appeal as soaps of this nature stage a market comeback. Fast cooling and the use of alcohol and sugar are among the major factors in causing transparency in soaps.

mechanical deformation of the soap.

In the most recent studies, McBain and Ross (12) submitted two bars of transparent soap (Pear's) to X-ray examination. Although one bar was 20 years old, it was observed that both the old specimen and a new sample gave X-ray patterns which showed that they were definitely crystalline. Although this contrasts with earlier studies, the transparent soaps were found to consist of a mass of ultramicroscopic crystallites. Keeping the soap for two decades at room temperature did not appreciably affect this structure. In considering their findings, these workers came to the conclusion that the difference between ordinary opaque or semi-opaque soaps and transparent soaps consists esentially of the very much fine: size of the crystalline particles of the latter.

From the foregoing it is evident why rapid cooling prevents the large crystal or "fibroid" structure normally present in soap. This, notes Silman (13), is substantiated by the fact that if a transparent soap is remelted and allowed to cool very slowly it becomes opaque, while rapid cooling does not change its transparency. For these reasons, says he, the following considerations should be borne in mind if it is desired to promote transparency in soaps: (a) Rapid cooling of the finished soap is essential, and (b) high viscosity of the soap stock is desirable to inhibit crystalloid formation. This can be attained by the addition of colloids and substances like glycerine, sugar and petrolatum.

Obtaining Transparency

FRELATED interest is the listing by Thomssen and McCutcheon (8), of four general methods for obtaining transparency in soap. These include processes in which: (a) The transparency is due to sugar, (b) alcohol and glycerine produce the transparency, (c) either of the first two methods is supplemented by the use of castor oil, and (d) the transparency depends upon the proportion of fatty acid in a soap and the number of times the soap is milled.

No matter which method is used there is one consideration which is emphasized by every expert. All of them stress the fact that the materials used in making transparent soaps should be selected carefully for purity and color, especially where clearness and lightness of color are desired in the finished product. In addition to high quality and lightness of color, Silman (3) also notes that the materials should be free of suspended matter. Such foreign particles are undesirable, says he, because they provide centers about which local crystallization can begin.

Alcohol in All Such Soaps

A S IS already evident, alcohol, giycerine and sugar are extensively used to promote transparency. These materials are generally added to the soap during the crutching stage (7). There is little doubt that alcohol is the most important of these materials. Indeed, Fisher (6) states that alcohol enters into the composition of every true transparent soap. He feels that without its aid, a soap that is merely translucent will result. All of this alcohol evaporates during the manufacturing and finally during the maturing periods. Fisher points to the curious fact that as long as any alcohol remains there is a certain cloudiness in the soap. As the last traces of alcohol disappear, the soap becomes clearer; this process going on from the outside toward the center of the cake.

In the United States, the government permits the use of a special denatured alcohol for making transparent soap. This grade, S.D.3A, consists of ethyl alcohol containing five per cent of methyl (wood) alcohol as the denaturant. Although some soap makers prefer to use a more expensive refined alcohol, experts (8) in the field do not feel that this offers any advantage. Martin (14) mentions that other governments also permit the use of specially denatured alcohol for making transparent soap.

Glycerine is another material that is widely used for imparting transparency and an emollient effect to soap. Here too, the use of a pure product is essential. However, the amount of glycerine incorporated in a soap must be carefully regulated. In excess, glycerine's hygroscopic action

may cause the bar to "sweat" and yield a pasty and sticky product.

In a process patented (15) nearly two decades ago, glycerine is mixed with the melted fats and oils before saponification. The resulting hard soap is then dissolved in alcohol by heating and stirring for about 12 hours at 80 to 85°C. In a method for making a transparent soap, as described in a recently published text (8), the fatty materials are saponified as usual and may consist of any good toilet base. The soap is then run into the crutcher and mixed with 95 per cent alcohol in a ratio of one part alcohol to two parts of total fatty acids in the soap, together with glycerine in the same proportion.

As was pointed out in a European review (16), if transparent soaps are to be made without glycerine and alcohol, then sugar must be used. While there are those who would not agree with this view, it is well known that sugar solutions are frequently used and are quite effective as replacements for glycerine for transparentizing soaps.

Sugar Causes Transparency

WHERE transparency in a soap is due to sugar, it is said (8) that at least 25 per cent of the charge should be coconut oil; the remaining fat consisting of tallow or any other fat or oil capable of giving a sufficiently hard soap. The soap is boiled and finished as usual and is then run into the crutcher to be mixed with a strong sucrose solution containing 10 to 20 per cent of sugar based on the weight of the soap. For making light colored soaps, Martin (14) has stressed that care must be taken that the sugar solution is not darkened by too high or too prolonged heating. He also notes that glycerine and sugar solutions impart a softening effect to the soap, which is usually counteracted by the addition of soda ash. Excessive amounts of sugar, like glycerine, will cause the soap to sweat and become sticky.

Fatty materials that can be used to make transparent soap consist chiefly of coconut oil, bleached palm

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World Glycerine Outlook ...

N SPITE of the fact that domestic glycerine production is currently almost at an all-time high, the United States, paradoxically enough, is still faced with a shortage of supplies. Glycerine demand in the United States still exceeds domestic production by about four million pounds a year, even though American production has increased by about 60 million pounds a year over the past decade, and the recent development of synthetic glycerine manufacture contributes an added 30 million a year to the domestic supply. The 1949 figure for total glycerine (including synthetic) produced in the United States is 193,000,000 pounds as compared to the production of 129,696,000 pounds in 1938 and the average of 183,000,000 pounds per year during the war years 1941-1945.

Glycerine is produced commercially as a by product in fat splitting, by recovery from soap lye crudes, and more recently through synthetic production by the Shell process. As yet, there is no commercial production by fermentation of sugar. Primary fats are split at an annual rate of about 300 million pounds. Glycerine from this source depends on the demand for fatty acids, thus following the fat and tallow market quite closely.

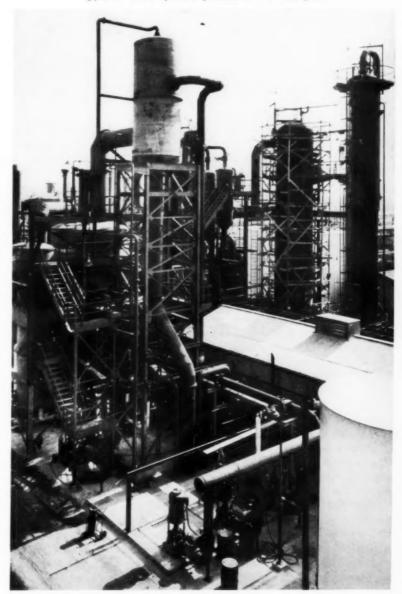
Undoubtedly, production of glycerine as a by product of soap manufacture could have and, in all probability, would have been much higher over the past ten years than indicated above, but for the remarkable developments in the field of synthetic detergents. In spite of a population increase of about 15 per cent in the ten year period 1939-1949, use of soap (as reflected in sales figures collected by the Assoc. of Amer. Soap and Glycerine Producers) dropped from 2,600 million to 2,400 million pounds per year in the past two years. During this same period, use of synthetic detergents has increased from less than 70 million pounds in 1939

Glycerine production in the U.S. exceeds that of war years, yet is still about four million pounds under the current high rate of demand. Imports may be off in '50 as Europe needs more. Synthetic production put at 30 million pounds.

to 702 million pounds in 1949. Synthetic detergents have acquired a

larger share of the cleanser market in the past few years, and accounted for

Helping to reduce the gap between supply and demand for glycerine is the synthetic produced at the Shell plant.



about 20 per cent of all the detergents sold in 1949. Production figures for synthetics prior to 1949 are not complete, however, on the basis of a report by 30 companies, 702.1 million pounds of synthetics were produced in 1949; while a report from 17 companies indicates a production of 401.1 million pounds in 1948. Obviously, the lower soap production or reduced potential, means less crude available for glycerine recovery.

Synthetic Is New Source

THE development of the Shell process has opened a new source of glycerine independent of the fat and oil market. The synthetic is obtained by direct synthesis from unsaturated gases produced by cracking petroleum oils for the production of gasoline. The process originated by the Shell Development Company was put into commercial operation in September 1948, producing glycerine in direct competition with the natural refined product. The synthetic output in 1948 and early '49 was somewhat spasmodic, but, since June, 1949, it has maintained a constant flow of 2,-500,000 pounds per month to the glycerine market. One of the main attractions of the synthetic product was its low price, as compared to natural refined glycerine which sold for 39.25 cents per pound at the outset of 1949. For some time Shell had been underselling by-product glycerine by about 35 per cent, quoting an average freight paid price of 23.85 cents per pound. In view of this competition, particularly with its expanding production, a sudden cut of 15 cents per pound on C.P. glycerine in March 1949 brought the price down to the synthetic level.

To review the price picture, crude sold for an average of eight cents per pound, dynamite, 12 cents; and C.P. about 12.5 cents per pound in the years immediately preceding the war. Ceiling prices of 11.5, 18 (later advanced to 18.25) and 18.25 for crude, dynamite and C.P., respectively, were established Nov. 10, 1941 by the O.P.A. and maintained until Nov. 11, 1946. With the removal of ceilings, prices immediately skyrocketed by 300 per cent to 47.5, 55 and 55.25 cents, and then dropped to 20, 29.25

and 29.50 cents by mid 1947. Prices found their level in 1948 at 28, 39.25, and 39.50 cents, and were maintained as such until early 1949, when prices again received a severe jolt. The sudden slash in prices in March 1949 was somewhat out of keeping with normal market adjustments of prices, which seemed to confirm the opinion of a number of glycerine buyers at the time that glycerine buyers at the time that glycerine had been overpriced. At the outset of 1950, crude sold for 16.50 cents per pound, dynamite, 23.5 and C.P., 24.25.

Lower Prices Attract Users

grades of glycerine, it is expected that a number of glycerine uses will be resumed in 1950 which were not practical previously at the 40 cent level. Glycerine consumption will be increased even more due to the development of new uses and expansion of established applications. Glycering demand has increased tremendously over the past decade, primarily because of the development of the alkyd resin industry, and manufacture of cellophane films, emulsifiers, etc.

To fill the gap between supply and demand, the United States will look to foreign imports, as it has done in all previous years, except during the war period of 1941-1944 when domestic glycerine was exported to our allies. Annual exports during the war ranged from 10,000,000 to 33,-000,000 pounds. We resumed our normal role as glycerine importers in 1945 and brought in 22,421,000 pounds in 1946, exporting only 653,-000 pounds that year. Imports practically balanced exports in 1947, while 1948 ended with 4,100,000 more pounds of glycerine imported than exported.

Foreign supplies were somewhat tight early in 1949, partially because of restrictions on exports from Argentina and Russia, two of our normal prewar suppliers.

Argentine imports were at a standstill early in 1949 due to the licensing of exports from that country. Having enjoyed high prices in the mid '40s, the Argentine government set a minimum price on all glycerine for export. The price set was well above

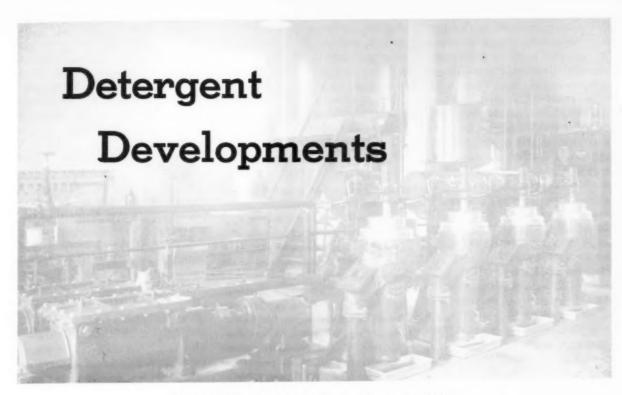
that prevailing in the American market. By August 1949, more than 7,-000,000 pounds of glycerine had accumulated in Buenos Aires, pending action by the Argentine government to remove controls. With the restrictions removed (Sept. 1949), the entire stock of stored crude was exported by the end of the year, and we are now trading on current production of the Argentine.

Prior to the war, Russia provided the United States with an average of 2.5 million pounds of glycerine annually; however, this situation reversed itself during the war, and we provided Russia with refined glycerine. Imports from Russia were resumed in the summer of 1949. When the U.S.S.R. provided 1000 tons of glycerine for American refiners. Later that same year, a lot of 675 tons of Russian crude was again purchased for American import, but was repurchased with Economic Cooperative Administration (ECA) funds for shipment to Germany. Since then, this shipment has been rejected, and returned to the United States, as the ECA policy is to purchase goods of American origin wherever possible. Latest reports are that the shipment has been placed on the American market at 16.9 cents per pound. Heavy imports from Russia are not too likely in 1950. However, on the basis of their shipments last year, it is safe to assume that they may have a few million pounds available for export.

In the period of January to June, 1949, 4,727,000 pounds of glycerine, primarily crude, were exported to Germany under ECA plans. As the year came to a close, little additional glycerine was exported to Germany, until late in December when the ECA allocated one million dollars for U. S. materials. At this writing, \$200,000 of this amount has already been spent for refined glycerine, with the balance to be used for the purchase of crude.

Reviewing the import export picture for 1949, glycerine imports in the first nine months were mostly routine. Cuba, the Philippine Islands, and the Netherland East Indies, where

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Proportionometer and centrifuges effect a continuous neutralization of free fatty acids in the Sharples continuous refining process.

OAPS are excellent detergents only in mildly alkaline, soft, warm water. The synthetic detergents are good cleansing agents for lightly soiled materials, but not for those heavily soiled. Repeated washing of such clothes with synthetic detergents leaves the fabric a dull gray. To minimize these deficiencies of soaps and detergents, to increase their effectiveness and to lower the cost of expensive surface active agents, various materials or builders are added. Sodium carbonate and bicarbonate, and various sodium silicates and phosphates are builders used in most laundry soaps. They contribute to detergency, protect the soap from decomposition by acid and hard water and neutralize acidic or saponifiable dirts.

Because of their better detergency compared to other alkaline salts, particularly their ability to contribute to wetting, emulsification, and deflocculation, and to prevent the redeposition of suspended dirt at a relatively low cost, the silicates and phosphates are the preferred builders for

By Reynold C. Merrill

Philadelphia Quartz Company

Part III

both soaps and synthetic detergents. The silicates even have value as antioxidants in soap. Sodium silicates have been standard ingredients of soaps since 1835. The polyphosphates have the interesting property of being able to "sequester" or form soluble complexes with calcium and magnesium ions, thus preventing the precipitation of soap in hard waters. Leading producers of sodium silicates are Philadelphia Quartz, Grasselli Division of duPont. Diamond Alkali, and General Chemical Division of Allied Chemical & Dye. Sodium phosphates are made by Monsanto, General Chemical, Victor, Westvaco, Rumford, Blockson and others.

It is estimated that the soap industry of the United States consumes annually more than 200 thousand tons of 41° Baumé sodium silicate solutions containing about 38 per cent anhydrous solids, and more than 50,000

tons of sodium phosphates. A typical commercial laundry soap contains 70 per cent tallow-coconut oil soap, 15 per cent sodium silicate solids with a silica to alkali (Na₂O) ratio of about 3, 7 per cent of tetrasodium pyrophosphate and 8 per cent water.

During World War II the Germans used extensively the sodium salt of carboxymethylcellulose or cellulose glycolic acid, under the name of Tylose, as a constituent of their detergent mixtures. This material has little or no detergent action of its own but by preventing the deposition and redeposition of dirt it does increase the detergent effectiveness of soaps, and especially of synthetic detergents which are usually deficient in this quality. Previously a similar material largely consisting of the sodium salts of pectinic acids obtained from the albedo residue of citrus fruits and known as Tergina had been used in Italy for at least ten years. Within the past three years duPont, Hercules, and Wyandotte have begun production of carooxymethylcellulose (CMC) in the

United States for use in detergent mixtures and for other applications. This material supplements the phosphate and silicate builders and, since it is expensive, only 3 to 5 per cent is used in detergent mixtures. A typical commercial synthetic detergent mixture with builders suitable for heavy duty cleaning, will contain about 45 per cent of a synthetic organic detergent such as a long chain alkyl sulfate, or alkyl aryl sulfonate, 20 per cent sodium sulfate, 15 per cent sodium silicate with a silica to alkali (Na₂O) ratio around 2.5, 15 per cent pyro-, tetra- and tripolyphosphates and 2 to 3 per cent carboxymethylcellulose, with the remainder being water.

Polyamino carboxylic acids also have the properties of forming soluble stable complexes with calcium and magnesium, thus preventing the precipitation of soaps in hard waters. Although more expensive than the polyphosphates, they are, unlike the latter, stable when heated. They are used in liquid soaps. Complex forming organic products of this type, such as the sodium salts of ethylene diamine tetra acetic acids, were produced in Germany under the trade name Trilon, and are available in the United States under such trade names as General Dyestuff's Nullapons, Bersworth Chemical's Versene, and Alrose Chemical's Sequestrene.

Organic nonelectrolytes such as hexanol and phenols have been added to soaps for many years to improve detergency and germicidal action. Recently the Procter & Gamble Company has patented the use of long chain nitriles, alcohols, N-acyl morpholines, and ethanol and glycerol amides as builders, particularly for synthetic detergents.

Optical Bleaches

CONSIDERABLE interest has been shown during the past three or four years in the use of "optical bleaches" in soaps and detergents. These are white or colorless dyes, or other materials that combine with fabrics to give a blue fluorescence in sunlight or ultraviolet light. This neutralizes the yellowish or brownish tinge fabrics show when soiled and washed repeatedly. Their chief advantages are

that they increase apparent whiteness without lessening fibre strength as chlorine or peroxide bleaches may do, and that they increase the whiteness or total amount of light reflected by a fabric. Ordinary blueings decrease the amount of reflected light resulting in a duller, grayer fabric. The much publicized "Solium" in Lever Bros.' Rinso and "Pyray" in Colgate-Palmolive-Peet's Super Suds are optical bleaches.

These optical bleaches may be derivatives of diamino stilbene containing aromatic or heterocyclic nitrogen rings, benzimidazol, benzidine, and imidazolone. For example, the use in soaps of 0.003 to 0.06 per cent of the sodium salt of 4,4' bis (*p*-amino benzoyl amino) 2,2' stilbene disulfonic acid has been patented by the Lever Bros. Co. General Dyestuff's Blankophors, Geigy's Tinopal BVA, Calco's "Calcofluors" and National Aniline's Fluorescent Purple 2G are products of this type commercially available at prices from \$1.50 to \$3.50 a pound.

Most soap and detergent products sold to the public contain perfumes which are generally complex mixtures of natural and synthetic ingredients such as oils of bergamot, lavender and geranium, phenyl ethyl alcohol, hydroxy citronellal, geraniol, eugenol, ionone, amyl hydrocinnamic acid and many others.

Physical Forms of Soaps

RAY and other types of investigations have shown that a single pure soap, such as sodium palmitate, may exist in as many as four different crystalline forms of varying properties at room temperature. When the soap is heated, it passes through a series of five anisotropic liquid crystalline or mesomorphic phases mostly of the smectic type, before melting to isotropic liquid. The existence of first order transitions between the different phases has been demonstrated by studying the changes in volume and expansion coefficients, thermal and optical effects, and X-ray diffraction patterns, although each method does not detect every phase change.

Synthetic detergents do not appear to show this multiplicity of polymorphic forms. However they have not yet been completely investigated. At least two additional liquid crystalline phases, neat and middle soaps, are formed when substantial quantities of water are present. The former corresponds to the type of soap obtained in the kettle during the commercial soap boiling process while the latter is the undesirable "gum soap" which occasionally forms. The stability of the liquid crystalline neat soap phase is shown by its melting point which is almost as high as or, in the case of sodium oleate, even higher than that of the anhydrous soap. The corresponding liquid crystalline phases of long chain sulfonic acids have melting points more than a hundred degrees higher than those of the anhydrous acids. Liquid crystalline phases of aqueous potassium laurate, myristate or coconut oil soaps are stable at room temperature.

The solubility of soaps in water is usally overestimated. Only sodium laurate and oleate, and potassium laurate, myristate, and oleate are readily soluble in water at ordinary room temperatures. Each soap shows a limited range of temperature, known as the Krafft "point", below which the soap is only very sparingly soluble and above which it becomes readily soluble. The solubility of soaps decreases with chain length and increases with increasing unsaturation of the constituent fatty acid. Potassium soaps are more soluble than sodium. The minimum temperature needed to obtain a 1 per cent solution of sodium stearate is 67° C., whereas a 1 per cent solution of sodium palmitate, which has two less carbon atoms in the fatty acid chain, can be obtained at around 55° C. Sodium myristate, with four less carbon atoms, forms a 1 per cent solution at 41° C.

The relatively high electrical conductivity of soap and detergent solutions, which compares favorably with that of other sodium salts such as the chloride and acetate, shows that the soap is extensively dissociated into positive and negative particles which are good conductors of electricity. The number of particles in very dilute soap and synthetic detergent solutions, as indicated by their osmotic activity, is

practically the number expected if the soap were completely dissociated into simple positive and negative ions. At moderate dilutions the number of particles relative to the total concentration decreases rapidly until less than half-in some cases only 20 per centas many particles are present as would be expected for complete dissociation of the soap into simple ions. The electrical conductivity usually also decreases at the same concentration although not so much. These facts indicate that the solution now contains electrically charged colloidal aggregates or micelles which are composed primarily of the long chain ions with a portion of the oppositely charged ions and behave as a single particle.

The concentration range at which this transition from simple ions to micelles occurs depends on the nature of the soap or detergent, the temperature, and the presence of other materials in the solution. Most of the transition from simple ions to micelles in sodium laurate solutions begins about 0.5 per cent soap. The concentration range in which this change to colloidal solutions occurs decreases rapidly with increasing length of the carbon chain of the soap to less than 0.029 per cent for sodium palmitate.

Ultracentrifugal and light scattering experiments have shown that the average micelle for a detergent with a chain of twelve carbon atoms

contains about 60 long chain ions and approximately half as many ions of opposite sign. The exact composition of the micelle varies with concentration, presence of added materials, and nature of the particular detergent. At sufficiently high soap concentrations the presence of micellar aggregates is shown by X-ray diffraction. The occurrence of micellar aggregates in soap solutions was first demonstrated by Prof. J. W. McBain, formerly of Stanford University, who with his collaborators has been for more than thirty years an outstanding investigator of the physical chemistry of soap and detergent systems.

Other physical chemical properties, such as the rates of diffusion, electrical transport numbers, high frequency conductivity and behavior on ultrafiltration, also show the presence of micellar aggregates in soap and detergent solutions.

Detergent Action

THE detergent or cleaning action of soaps and modern synthetic materials is a complex process involving many factors. The importance of each specific mechanism varies with the nature of the dirt, the type of soiled material, the constituents of the cleansing agent, and the physical and mechanical conditions. A primary requisite is that the detergent solution come into intimate contact with or

"wet" the material to be cleaned. Wetting action is well illustrated by the nationally publicized demonstration of the duck that sank in water containing a small amount of a synthetic wetting agent. The air spaces in the duck's feathers, largely responsible for their buoyancy, were penetrated by the wetting agent, whereas ordinary water or aqueous solutions did not do so.

After soil and detergent solution have come into intimate contact, the dirt is removed by displacement due to wetting, by reactions such as neutralization or saponification to give water soluble materials, or by emusification, peptization, dispersing action, ion exchange or actual dissolving or solubilization of the dirt by the detergent solution. Compounds containing polar groups in the middle of a hydrocarbon chain are good wetting agents, but since they are not efficient in removing dirt, are poor detergents. Those with a polar group at one end of a hydrocarbon chain are the best deter-

Dirt once displaced must be prevented from redepositing on the fabric. Soil may be kept in suspension by giving it a high electrical charge due to preferential sorption of either anions or cations, by attaching to each dirt particle a highly solvated stable colloid, or by mechanical action such as occurs when the particles are trapped in a stable foam.

The displacement of dirt is favored by low surface and interfacial tensions, although neither of these can be used as a measure of detergent action. Likewise the foaming of a soap solution is an indication that sufficient soap is dissolved to clean adequately but neither the volume nor stability of the suds is directly related to the effectiveness in cleaning. Detergency may be regarded as a reaction between a soil-fabric (or other substrate) complex and a detergent solution to give clean fabric, a suspension or emulsion of dirt, and the detergent solution. Usually an intermediate complex between the fabric and detergent is involved.

Detergency processes as now carried out are mechanically inefficient. Even in the presence of a good deter-(Turn to Page 147)



"Next time we heist a drug store, Clarence, pick up some of dat stuff! I ain't completely satisfied wid de soap you're usin'!"

APPLICATIONS AND COLOR PROPERTIES

HE ultimate judge of the merits of an optical bleach is the housewife. While it is probably fortunate from a sociological viewpoint that housewives are not all standardized and identical in their habits, it does make it difficult to arrive at a test method which will represent the practice of an average housewife. The housewife does her wash and gets a qualitative impression of its whiteness.

Preparation of Washed Fabric

It is probably a rare instance when a housewife will make a very careful comparison between the whiteness of her wash and that of her neighbor's. Nevertheless, the soap manufacturer must attempt to carry out comparisons under controlled conditions in order to evaluate various products in which he is interested. The two phases of the test which must be considered are 1) the preparation of the washed fabric, and 2) its evaluation.

There are several variables in the laundering procedure which must be standardized for reproducible results in the evaluation of optical bleaches. The concentration of the optical bleach in soap is important because if too little is used, the effect on the cloth is very difficult to perceive. On the other hand, if too much is used, the amount will not conform to a quantity consistent with the economical manufacture of soap. The whitening effect of an optical bleach is important not only after a single wash, but also after several washes during which time the concentration on the fabric may increase.

The amount of soap that the housewife uses is subject to considerable variation, depending in part upon the hardness of the water and in part upon the amount of suds desired. Likewise, the amount of optical bleach contained in various soaps or detergents may vary considerably, generally below 0.1 per cent based on the weight of the soap or detergent.

The amount and nature of cloth which is put into the washing machine, the temperature of the water, and the time of washing vary greatly with the housewife, but for evaluation purposes, these factors should be standardized.

There is considerable variation in the hardness of the water throughout the United States, and anyone interested in this subject should refer to the literature. (2) The metal salts primarily responsible for hardness in water are the salts of calcium and magnesium. In testing soap, the use of excessively hard water should be avoided to prevent the formation of insoluble soaps and their deposition on the cloth. With hard water it is dif-

rounding color has an influence on the appearance of a fabric. Retinal fatigue tends to emphasize colors complementary to those previously viewed.

Differences between the light source are very important, not only in intensity but also in the relative proportion of ultraviolet to visible light. A large variation is found in changing from an incandescent light to daylight. There is need for a standard daylight that will duplicate an average natural daylight not only in the visual range but also in the ultraviolet. The presence of ultraviolet in daylight can easily be demonstrated by building a sample-viewing box. This box, painted black on the inside, should be completely opaque, except for the eye hole

Optical Bleaches

By E. I. Stearns, T. F. Cooke Calco Chemical Division, American

-

ficult to obtain reproducible deposits so the precision of the test is poor.

Overall Evaluation of Efficiency

When the housewife finishes her wash, she somehow reaches a conclusion as to how nearly her white clothes approach her ideal of whiteness. When the housewife chooses one soap as the best, who is there to dispute her choice? Somehow then, and in spite of all the difficulties involved, it is necessary to make an overall test for the efficiency of an optical bleach. Variations in individual opinions and variations in the light under which the fabrics are judged, both contribute to randomness and disagreements in evaluation of efficiency.

Individual opinions vary because of several physiological and psychological effects. Each person has his own idea of a standard white, for example, some prefer a bluish tint and some a pinkish tint. The color perception of individual eyes varies. The surand a small window which is directly over the place where the cloth sample is mounted. An ultraviolet transmitting glass such as a Corning #986 glass filter is placed in the small window. When sunlight strikes the glass filter directly, a fabric sample which has been treated with an optical bleach fluoresces brightly.

Strength

The strength of fluorescent intensity of an optical bleach is important because it determines the amount required in a given product. It is easier to obtain a strength estimate when no shade difference is involved. Several factors influence the strength of the optical bleach in a fabric, such as 1) the percentage of pure compound contained in the optical bleach, 2) the amount removed from the wash water by the fabric, and 3) the amount of ultraviolet light absorbed and converted to visible light. For testing successive de-

liveries of optical bleaches, it is possible to use a spectrophotometric method of evaluation. This method of testing is of interest because it offers greater precision, and is more rapid than most others.

In determining the strength of fluorescence of an optical bleach, it is necessary to have a standard. To minimize the effect of any variations, a standard control sample of optical bleach should be evaluated along with each sample. Such a standard should be stored in a light-proof, air-tight bottle. These precautions are taken to prevent any possible degradation by light and to prevent absorption of moisture, either of which may cause the standard to change.

in Soap

and H. E. Millson Cyanamid Company

> Quenching of fluorescence (18) with increasing amounts of optical bleach is not a factor in the evaluation of optical bleaches for soap, because in the range in which they are generally used, namely, 0.1 per cent or less on the weight of the soap, the fluorescence intensity always increases with increasing concentration. If a test made with a higher concentration of optical bleach is compared with one made at a lower concentration, a shade difference is also noticeable under ultraviolet light. The test sample having the higher concentration appears greener. For this reason, when a sample fabric is compared with a series of standards, it is necessary to include lower and higher concentrations in order to eliminate the effect of shade differences. In order to increase the precision of strength evaluations, it is advisable in the case of light weight fabrics to view at least four layers of cloth.

> > It is also necessary to reverse

the position of the samples being examined under ultraviolet light before deciding that they are equal, because the distribution of ultraviolet light beneath the lamp is likely to be unequal. Another source of inequality in ultraviolet illumination will result when samples are viewed at unequal distances from the light source. An increase in intensity of the ultraviolet light is roughly equivalent to an increase in concentration of the optical bleach.

Shade or Hue

There is considerable variation in the shade of the optical bleaches on the market. An even greater variation exists among the experimental samples which soap manufacturers are occasionally asked to test. The shades of the fluorescence of fabrics treated with optical bleaches are very sensitive to a change in the intensity of ultraviolet light. If two cotton fabrics similarly treated with optical bleach are placed equally distant from the ultraviolet light source, but one is placed so that the ultraviolet rays fall perpendicularly on the fabric, whereas the other is placed at an angle so that the intensity of ultraviolet light is reduced, the sample on which the ultraviolet light is less intense will appear redder in shade. Also if the specimen is moved further away from the ultraviolet source, it will have less ultraviolet light incident upon it and will appear redder (6). It is not clear whether this effect is visual or is a physical characteristic of the fluorescence. It is known (9) that even monochromatic light will appear differently colored depending upon its intensity.

In an experiment to illustrate this effect, the light in a General Electric spectrophotometer was adjusted to a certain wavelength, made quite dim, and the apparent color noted. The intensity of the light was then increased and it was noted that the apparent color changed even though the distribution of the light was known to remain constant within a 10 millimicron band width. Table I (below) illustrates some of the changes that take place at various wavelengths:

The change in hue from violet to blue at a wavelength of 425 mu in the above table is similar to the effect observed with an increase in the ultraviolet intensity on a fabric treated with an optical bleach, and, therefore, the visual factor probably contributes to the apparent hue change in the latter case. On the other hand, there are theoretical reasons (5) why we might expect a real change in the curve shape of the fluorescence emission distribution with a variation in the intensity of the ultraviolet excitation. It is important to have equivalent strengths before a comparison of shade is made between two samples, because the apparent hue will vary with the strength. The intensity of fluorescence is so great when the samples are viewed in ultraviolet light that dark adaptation of the eye probably does not affect the apparent hue.

The construction of the cloth is also a factor in determining the apparent hue or shade, and compa isons therefore should be made only on identical fabrics.

Build-up

Build-up is the term used to describe the process of change in color and strength as the concentration of optical bleach is increased. In home laundering operations, clothing is washed many times and each time it may be subjected to additional optical bleach. With some bleaches it is found that after approximately ten successive launderings no appreciable increase in fluorescence is obtained. With other optical bleaches, however, the intensity of fluorescence is still in-

(Turn to Page 143)

	Table	e I		
Wavelen	gth 1	Dim		Bright
425		Violet		Blue
475		Blue		Greenish Blue
575		Reddish Ye	ellow	Reddish Yellow
625		Reddish Or	range	Yellow
700		Red		Orange



WHAT'S

FACING PAGE

Upper left, special introductory offer for "K-95," 'disinfectant and cleanser made by Whitman Laboratories, Opelousas, La., is two-bottle display carton. Stock amber bottles by Owen-Illinois Glass Co., Toledo.

"Lanol," gew shaving cream with lanolin base, (upper right), announced recently by Virginia Products, Lisbon, Portugal. Emollient effects and skin freshness are claimed for the product.

New "4-jet Atom-Spray" (lower left), introduced in combination offer by Lowell Manufacturing Co., Chicago. New "Atom Spray" (foreground) emits finely dispersed spray. Combination of new spray and "Apex" all-purpose spray is retailing for \$1.79, \$1.95 on West Coast. Combined retail value of the two is \$2.35 and \$2.55 on the West Coast.

Lower right: New label adopted by Fuld Brothers, Inc., Baltimore, for their "Vitozone Air Fresh Bouquet" deodorant. New label is at right, older style, left. Eightounce, "Duraglass" container is by Owen-Illinois Glass Co., Toledo.

ON THIS PAGE, COUNTER

The latest addition to the line of household soaps and detergents of Armour & Co., Chicago, is

household cleaner. Features include high degree of whiteness of color and slight "clean soap smell." Package is dark green and bright yellow. Contains 14ounces.

"Hopalong Cassidy Pure Castile Soap" is the latest addition to the line of Daggett & Ramsdell, Inc., Newark, N. J. Full color "Hoppy" illustrations are designed not to rub off. Four cakes retail for 59 cents.

New at Shulton, Inc., New York, is a liquid hair shampoo packaged in unbreakable plastic bottle. Five and three-quarters ounces of new shampoo retail for 85 cents in drug and department stores. Shampoo is scented with "Old Spice" perfume.

The carton idea is now being used by Procter & Gamble Co., Cincinnati, to promote its "Camay" soap. Magazine and radio advertising are featuring the promotion of the carton, which has been designed for maximum display value.

Something new in liquid soap dispensers is this foot operated "Ped-O-Flo" unit made by Ped-O-Flo Co., Waverly, Ia. The wall bracket is made of smooth black Durez plastic. Volume of soap dispensed by bellows pedal is controlled by hand operated valve at the top of dispenser.













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TRADE



Chem. Specs. Names Evans

Clarence E. Evans was recently appointed sales manager of Chemical Specialties, Inc., Springfield, Mass., manufacturers of "Practi-Kreme." He is also sales manager for Kemsuds Powdered Hand Soaps, industrial hand cleaners, manufactured by Chemical Corp., parent company of Chemical Specialties, Inc. At one time, Mr. Evans was associated for over 14 years with Procter & Gamble Co., Cincinnati, in the New England area.

Stevens in New Post

James E. Stevens, formerly of the staff of the Association of American Soap & Glycerine Producers, was recently appointed executive secretary of the Pennsylvania Petroleum Assn., Harrisburg. From 1929 to 1946 he was secretary of the Industrial Soap Assn., and following that was in charge of legislative reporting for the AASGP. Earlier he had served as an investigator for the Federal Trade Commission. Mr. Stevens is a graduate of George Washington University Law School, and was admitted to the bar of the State of Indiana in 1924.

Canada Toilet Soap Tax Off

Removal of a five percent special tax on toilet soap was effected in Canada, March 28. The decision to drop the tax was announced March 28 by Hon. Douglas Abbott, Minister of Finance, in introducing in the Dominion House of Commons his annual budget for the coming year. The reason given is the difficulty in differentiating between certain kinds of toilet soap and household soap which resemble each other in quality. An estimated \$600,000 annually has been raised by the tax. The eight percent sales tax remains on all soap.

A slight reduction in retail prices of soap was indicated by a Procter & Gamble spokesman, who said selling prices to retailers will be cut immediately by the amount of the five percent reduction. No immediate change in prices was foreseen by Thomas J. Williams, vice-president of Colgate-Palmolive-Peet Co., Ltd.

Wood Stock Offered

First public offerings of securities of G. H. Wood and Co., Toronto, was made recently with the offering of \$400,000 five and one-half percent cumulative redeemable sinking fund preferred shares, having a par value of \$100, and of \$500,000 four and one-half percent first mortgage sinking fund bonds, Series A, by Gairdner and Co., Toronto investment house. Part of the proceeds of the issue of bonds and preferred stock will be used for the construction of a new plant, and the balance for general corporate purposes.

Ky. Labeling Bills Die

Two Kentucky bills requiring labeling to show ingredients and net content of soaps, disinfectants and related products both died in the state's House. SB-47, requiring labels to list ingredients, passed the Senate and died in the House; while S-101, requiring the net contents of the package to be given also passed the Senate and died in the House.

Gillette Fat, Oil Report

The report of the Senate Agriculture sub-committee investigating fats and oils, issued Mar. 29, recommends the passage of three Senate bills covering soaps, the enactment of legislation to equalize imports, exports of fats and oils, and the overhaul of the Fats and Oils Branch of the Department of Agriculture. The sub-committee recommends also that the law setting up import controls be extended another two years. It expires July 1, 1950. The sub-committee's report urged also that the law be administered to permit importations of only such oils as are essential to the domestic econ-

Senator Guy M. Gillette was the chairman of the sub-committee carrying on the investigations. Bills introduced by him last year relating to soap are: S. 2392, which would enlarge the definition of cosmetic contained in the Federal Food, Drug and Cosmetic Act, by removing the exception made in the case of soap; S. 2531, which would amend the Act to require labeling of soaps and detergents, and S. 2656, to prohibit the movement in interstate commerce of injurious, misrepresented and uninformatively labeled househould cleaners. The latter two bills have been referred to the

At the third in a series of regional getacquainted luncheons for soap and detergent manufacturer members of the Assn. of Amer. Soap & Glycerine Producers, Inc., held at the Union League Club, Chicago, Mar. 22, were, from left clockwise: Roy W. Peet, AASGP manager; Walter F. Straub, Antiseptol Co.; W. S. Jessop, U. S. Sanitary Specialties Corp.; Wrisley B. Oleson, Allen B. Wrisley Co.; R. P. Shaw, Swift & Co.; C. S. Miner, Jr., Miner Laboratories; T. B. Robertson, Jr. and T. B. Robertson, Theo. B. Robertson Products Co.; Charles R. Lichtenburg, Chicago Sanitary Products Co.; C. Wood and F. T. Bruce, Cudahy Products Co. Previous regional luncheon meetings were held in Los Angeles, Feb. 1, and in San Francisco, Feb. 7, with Roy Peet as host.





• This completely new 48-page book entitled "Mathieson Caustic Soda" is now available to users throughout industry. Fully illustrated, it covers in detail the manufacture, economics, properties, handling and sampling of this product.

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SERVING INDUSTRY, AGRICULTURE AND PUBLIC HEALTH

Senate Committee on Interstate and Foreign Commerce, the first to the Labor and Public Welfare Senate Committee.

The report is 18 pages in length, of which approximately five pages are devoted to soaps and detergents. It bears the number 1374, and is entitled "Utilization of Farm Crops—Fats and Oils."

C-P-P Production Heads

The appointment of Leo A. Scott as general superintendent of domestic plants and Joseph G. Ferraro as Jersey City plant superintendent was announced recently by Hugh R. MacMillan, Jr., vice-president in charge of production for Colgate-Palmolive-Peet Co., Jersey City, N. J.

Mr. Scott, who fills a vacancy that has not been filled for the past three or four years, joined the company in Kansas City in 1931. He was transferred to the production standards department of the Jersey City plant in 1935, becoming successively production supervisor and plant superintendent.

Mr. Ferraro became associated with Colgate-Palmolive-Peet Co. in 1934 as a laboratory technician. Since then he has held the positions of toilet article supervisor and, prior to his new appointment, production supervisor.

Dr. Marks is Sentenced

Dr. Lewis H. Marks of Paoli, Pa., and his attorney were sentenced recently for a wartime conspiracy to conceal German ownership of a Delaware patent holding company. The firm held American rights to patents owned by Henkel & Cie and several other German companies, manufacturers of soaps and detergents. Licenses under the patents were issued to a number of American concerns including Procter & Gamble Co.

Dr. Marks received a suspended sentence of one year and a day and was fined \$10,000 on each of two counts. He is said to be suffering from a heart ailment.

In 1943, the Alien Property Custodian took over the organization, established as American Hyasol Corp., properties of which were valued at from \$3,000,000 to \$10,000,000.

Detrex Appoints Fritz

Henry Fritz was recently appointed field engineer to serve the baking industry in mid-western states for



HENRY FRITZ

Detrex Corp., Detroit. He is in charge of the sale and servicing of the firm's bakery cleaning processes and depots in major mid-western cities and in the Chicago area. He makes his headquarters in Milwaukee.

TGA Meets May 16-18

Discussions of legislation, marketing, packaging, advertising and technical progress will be featured at the 15th annual meeting of the Toilet Goods Association, to be held May 16-18, at the Waldorf-Astoria Hotel, New York, according to a recent announcement by convention committee chairman Karl Voss of Karl Voss, Inc., Hoboken, N. J.

The Scientific Section of TGA meets on Thursday, May 18, at which time papers on "Solid Fatty Acids in Cosmetics" by William C. Giffin and Phyllis Caster of Atlas Powder Co., Wilmington, Del. and "Development of Odor Preferences" by Dean Foster of Joseph E. Seagram & Sons, Inc., New York, will be presented.

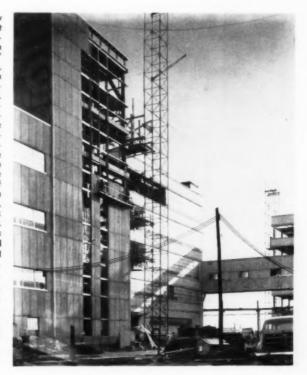
Three New Ultra Divisions

The establishment of three new selling divisions was announced recently by Ultra Chemical Works, Inc., Paterson, N. J. Austin Jones heads the package goods department; Fred H. Buck, industrial sales, and Walter R. Wakefield, institutional sales.

Monopoly Hearings Apr. 17

Hearings of the House Judiciary sub-committee investigating monopoly power are scheduled to get under way April 17, in Washington, D. C.

Completion of a new manufacturing plant at Edgewater, N. J., solely for the production of "No-Rinse Surf" synthetic detergent, was announced late in March by Lever Brothers Co., New York. Photo shows the enclosing of the seven-story tower. Complete continuous flow processing facilities, warehousing and office space are combined in the new building. The unit has a capacity of about a quarter of a million packages daily, according to Frank Baker, plant manager. A wage increase of six cents an hour and company paid surgical benefits were announced for plant employees at Edgewater, Baltimore and St. Louis. The master wage contract was signed by Lever and International Chemical Workers' Union, AFL, Locals 51, 217 and 344.





Lever Brothers Co., New York, will be called to testify, following investigation of the steel and news-



Charles W. Deane, above, formerly chief engineer for E. R. Squibb & Sons, Brooklyn, was recently appointed general engineering manager of Lever Brothers Co., New York. He is directing engineering operations of all Lever plants and coordinating new construction projects. Dr. Deane is an authority on plant design and engineering administration, fatty acid processing and hydrolysis, heat transmission and engineering unit processes. He is making his headquarters at Lever's general offices, 80 Varick St., New York.

print industries. Representative Emanuel Celler of New York is chairman of the subcommittee.

Diamond Earnings Drop

Net earnings of Diamond Alkali Co., Cleveland, in 1949 were down sharply as compared with the previous year. The firm had a net profit of \$3,042,298, equal to \$2.80 per common share, as compared with \$5,280,-632 or \$4.86 in 1948.

Cos. Chems. Meet May 19

The spring meeting of the Society of Cosmetic Chemists will be held May 19, at the Savoy Plaza Hotel, New York. Dr. Kenneth Russell of Colgate-Palmolive-Peet Co., Jersey City, N. J., is chairman of the program committee for the semi-annual meeting of the society, at which a number of technical papers will be presented.

Klein in New Quarters

Samuel Klein recently announced that his aromatic materials firm is now located in larger quarters at 100 Beekman St., New York. Earlier the firm announced a new perfuming material for toilet soap designated "Civetarome—SK."

Fat, Oil Report on Europe

Single copies of the 34-page report, entitled "Export Outlook for United States Fats, Oils and Oilseeds in Selected European Countries" are now available from the Office of Foreign Agricultural Relations, U. S. Department of Agriculture, Washington, 25, D. C. The report, written by Dr. L. J. Norton, agricultural economist, is based on his study of the demand for fats and oils in eight European countries.

AOCS Meets May 13

The 41st annual meeting of the American Oil Chemists' Society will be held May 1-3, at the Atlanta Biltmore Hotel, Atlanta, Ga. G. Conner Henry of Law & Co., Atlanta, is chairman of convention arrangements. In addition to the election of officers, there will be the Governing Board and group sessions at which technical papers will be read.

S. Z Weaver Dies

Samuel Z. Weaver, president of Weaver & Hugi, Inc., New York fat and oil brokers, died Mar. 22.

Jean Niel Changes Name

At the recent annual stockholders meeting of Jean Niel, Inc., New York, the firm name was changed to Perfumery Associates, Inc. Henry Retailliau and Robert A. Luthy were

"Tylo," new bubble bath detergent in tablet form for dishes and kitchenware is made by Trylon Products Corp., 2750 N. Wolcott Ave., Chicago. The tablets come in packages of 50 to retail for 60 cents and 100 to retail for \$1.00. Tablet is dropped into dish pan or sink and water is turned on. Added pressure of water increases foam and bubbles.



reelected directors and serve as president and secretary-treasurer, respectively. Dr. A. T. Frascati was elected



Fred Preu, assistant manager of the special products division of Shell Oil Co., New York, discusses odorless petroleum solvents at the March 14 meeting of the Detroit Paint Production Club. He told the group that the supply of these solvents is improving and should be adequate by the end of 1950. His firm has regulated its naphtha and solvent production schedule to meet the ever increasing demand for such raw materials, Mr. Preu declared.

a director and vice-president. He assumes the duties of technical director. The firm represents Jean Niel of Grasse France.

TGA CMC Standard

A standard (No. 34) for sodium carboxymethylcellulose (CMC) was issued recently by the Toilet Goods Assn., New York.

Howard Seeland Dies

Howard F. Seeland, 52, for many years manager of the Stanco plant at Linden, N. J., and a purchasing agent for Esso Standard Oil Co. since the Stanco division was taken over, died April 5 in Monmouth Memorial Hospital, Long Branch, N. J., after a brief illness. Surviving are his widow, Violet Seeland, a daugter, and a son, Franklin Seeland, connected with R. J. Prentiss & Co., New York.

Mathieson Names Ward

Appointment of Donald G. Ward as general traffic manager of Mathieson Chemical Corp., Baltimore, was announced recently. Harry M. Mabey, who held the post for 30 years, continues as special traffic consultant.



... in your detergent

Carbose* can do it. Carbose is Wyandotte's "detergency promoter." As little as 1% of Carbose added to a synthetic detergent can increase soil removal and whiteness retention properties by 20 to 50%.

Here's what three laundries say about detergents promoted with Wyandotte Carbose:

"We got soft water quality in a hard water plant with a decrease in the cost of supplies." "We got an outstanding improvement . . . reduced the cost of our supplies by 24.4%."

"Significant increase in quality . . . reduction in cost of supplies 50%."

These are just a few of hundreds of field observations made with different formulations of Carbose with synthetic detergents and builders. We think they show that it might be worth while for you to investigate Wyandotte Carbose. Why not write for samples today?

*Reg. U. S. Pat. Off.

SODA ASH • CAUSTIC SODA

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AROMATIC SULFONIC ACID DERIVATIVES

OTHER ORGANIC AND INORGANIC CHEMICALS

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Wyandotte, Mich. • Offices in Principal Cities



Cleaners at P.A.'s Chicago Show

MANUFACTURERS of industrial hand soaps and cleaning compounds for industrial maintenance and process cleaning were among the more than 100 exhibitors who took part in the 16th annual Products Show, sponsored by the Purchasing Agents Association of Chicago, at the Hotel Sherman, recently.

A new type detergent to be used in steam cleaning of metal and other surfaces was shown at the booth of Oakite Products, Inc.; attention being drawn to a cleaning gun. Development of this detergent by Oakite, a spokesman said, has eliminated complaints about smell and irritating effects which have previously been a drawback to the steam cleaning method. The process, he said, is widely used by railroads for cleaning streamliners, and also by other transportation agencies.

On display was a selection of Oakite's 80 cleaning materials, adapted to all phases of industrial cleaning. Oakite's personalized service program, now in its 40th year, was explained by F. J. McNally, Chicago division man-

ager, assisted by eight field men. Literature regarding the materials, methods and equipment suitable for specific industries was distributed.

Lightfoot Schultz & Co., New York, presented a new, moderately priced, powdered industrial hand soap, "Elesco," and also displayed their various heavy duty soaps for factory workers, developed during the company's forty years of operations. J. D. compton, Chicago manager, was in charge.

G. H. Packwood Mfg. Co., St. Louis, Mo., offered a new waterless hand cleanser, which after four years of development, is now in full commercial production, according to H. B. Lamping, Chicago sales manager. Other industrial skin cleaners and dispense. s from the company's line were also shown.

Turco Products, Inc., Los Angeles, Calif., exhibited their extensive line of specialized cleaning compounds and processing solutions for treating all metals and alloys during fabrication processes. Also shown was "Handisan," a lanolated granular hand

cleanser, with dispenser; mopping compounds; waxes and other plant maintenance materials. In charge was W. L. Donovan, Chicago sales manager, assisted by George Gilgenbach.

Pesticide Co., veteran Chicago pest control firm, offered visitors a chance on a drawing for a Hudson electric paint sprayer; and representatives explained the firm's extensive exterminating, disinfecting, deodorizing and fumigation services. Among recent jobs, Miss M. Rilea of the staff said, is the fumigation of bundles of clothing donated from the Chicago area to CARE, for distribution to needy persons in Europe.

Chi. Chem. Exposition

The sixth National Chemical Exposition sponsored by the Chicago Section of the American Chemical Society will be held concurrently with the 118th national meeting of the ACS at the Chicago Coliseum, Sept. 5-9. Dr. Marvin C. Rogers, research director of R. R. Donnelley and Sons Co., Chicago, is chairman of the committee in charge of the meeting. Among those assisting him for the meeting, which will also include once again the special feature of "Chemical Trail Blazers," are Dr. C. S. Miner, Jr., of Miner Laboratories; Dr. H. W. Schultz and B. N. Rockwood, of Swift & Co., and A. S. Schneider, Armour Laboratories, and H. F. Schwarz, of Sherwin-Williams Co. It is expected there will be over 200 industrial exhibitors, with the attendance estimated at around 50,000. Advances in chemical research will be displayed as a feature of "Chemical Trail Blazers."

Continental Sales Shifts

W. B. Larkin and R. E. Tanner have been appointed sales managers for the Chicago city district and the Chicago tri-state area, respectively, it was announced recently by Continental Can Co., New York.

Lukens Names Theisinger

The appointment of Dr. William G. Theisinger as regional manager of sales for Lukens Steel Co., Coatesville, Pa., with headquarters in Houston, Tex., was announced re-



Martin Schultes of Hewitt Soap Co., New York, and John Cavallero of Steltz Co. exhibiting three of their latest hauls taken from the St. John River in Florida. Martin writes he had a wonderful winter vacation from Jan. 2 to Mar. 13, without even a drop of rain. Most of his time was Florida's west coast. The last two weeks of his vacation were spent fishing up the Ocla-waha River, and for nine out of 10 fishing days Martin was in action. On eight of the nine days Martin says he was high man for Sportsman Lodge at Welaka, where he was staying.

Cleaning compounds do a Better Job faster with

Macconol

Claims don't clean! NACCONOL does. It makes any mixture a better mixture by providing just the right combination of: FAST PENETRATION · THOROUGH WETTING · EXCELLENT DETERGENCY . GOOD EMULSIFICATION . SUPERIOR DISPERSION OF MINERAL SALTS . HIGH STABILITY TO ACIDS, ALKALIS, OXIDIZING AND REDUCING AGENTS . RAPID RINSABILITY . HIGH EFFICIENCY AT LOW CONCENTRATIONS . ECONOMY IN HOT OR COLD SOLUTIONS OVER A WIDE pH RANGE

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Portland 9, Ore. 730 West Burnside St. Beacon 1833 Partiand 9. Ora., 730 West Burnside St Beacon 1853 Toronto, Canada, 137-145 Wellington St. W.





cently by J. Frederic Wiese, vice-president in charge of sales. Dr. Theisinger joined Lukens in 1935, and for the past four years has been manager of technical sales.

ACF Elects R. B. Colgate

Robert B. Colgate, a member of the executive committee of Colgate-Palmolive-Peet Co., Jersey City, N. J., was recently elected a director of American Car and Foundry Co., New York. At one time Mr. Colgate was vice-president of research and development of C-P-P.

Scott Detergents Move

Scott Detergents, manufacturers of cleaning compounds for the restaurant and food industries, are now located in new quarters at 1523 Land Title Building, Broad and Chestnut Sts., Philadelphia 10. The company makes a detergent-sanitizer combination under the name "Blendex."

Hail Rinseless Detergents

Rinseless laundry detergents were hailed for their value in making life easier for the housewife who does her laundering at home. Products of Procter & Gamble Co. and Lever Brothers Co. were mentioned at the Home Laundry Conference sponsored by the American Home Laundry Manufacturers Association at a meeting in Chicago in January. With the new rinseless detergents according to Clarence G. Frantz, president of Apex

Photo above taken at the annual dinner for members of Druggists Supply Corp. by Magnus, Mabee & Reynard, Inc., New York, at the Hotel Statler, New York, Mar. 4. Attended by more than 400 persons. Wheeler McMillen, editor of "Farm Journal," spoke. Peter Donald and Yonkers Glee Club entertained.

Electrical Mfg. Co., and former president of the association, it is necessary only to put clothes through the wringer once instead of three times as formerly.

Reardon Joins Roubechez

Roubechez, Inc., New York, recently announced that T. H. Reardon, formerly of the Naugatuck Aromatics Division of United States Rubber Co., New York, had joined the firm in a sales capacity. At the same time the company announced the purchase of the patent rights and good will of R. W. Wilson Co., New York, manufacturers of cases and closures sold under the trade names of "Klik-Tite," "Glider," "Tip-Top," etc.

ACS Elects Vaughn

Thomas H. Vaughn, of Wyandotte Chemicals Corp., Wyandotte, Mich., was recently elected chairman of the Detroit section of the American Chemical Society for 1950.

Cole in P&G Drug Post

H. S. Cole, sales director for Thomas Hedley & Co., subsidiary of Procter & Gamble Co., Cincinnati, in England, was recently appointed manager of the drug products division of P&G. He succeeds Harold R. Hall, who has become a research fellow and faculty member of the Graduate School of Business Administration of Harvard University. Mr. Hall will continue to serve the division in a consulting capacity while at Harvard. Mr. Cole has been with P&G since 1931. He started with the firm in the advertising department, and later became manager of the Chicago sales district.

Lists Cleaning Needs

Housekeeping at Kingsport Press, Inc., large printing plant at Kingsport, Tenn., is described in a recent issue of the company's house organ, "Press Piper." In addition to itemizing the company's yearly purchases of powder and cake soaps, scouring powder, disinfectants, floor wax, window washing preparation, floor sweeping compound, paper towels, brooms, brushes and mops, etc., plant window washing and laundering operations are described.

New Cowles Lab

Cowles Chemical Co., Cleveland, recently announced the transfer of its research and development laboratory from the campus of Syracuse University to enlarged quarters at 105 S. Townsend St., in downtown Syracuse. Projects are conducted by a staff of 20 chemists and engineers under the direction of Dr. C. W. MacMullen, technical director of the company.

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If reclosure is important to your product —

Take a good look at the container pictured above. Maybe it offers you a new approach to greater sales. Some of its advantages are:

- 1. It opens easily and recloses securely.
- 2. It protects your product from air.
- Its shape permits a big eye-catching label.
- Its wide mouth opening allows easy access with large measuring devices.

IS IT YOUR ANSWER?

This container was invented by Canco for use in vacuum-packing coffee. Its use, however, was extended for vacuum-packing (or gas packing) dry milk, tobacco, peanuts, and other nuts, hard candy, nut brittle and shortening.

It is also used without vacuum treatment for chocolates, cookies, fruitcakes, miscellaneous confections and even surgical bandages.

Your packaging problem may be similar. If it is, why don't we talk over the special details together?

Since 1901, Canco has been creating new and more effective packages. There is hardly a major development in the packaging field that this keen organization has not pioneered.

We can advise you on how to build sales, cut costs, improve processes, and on filling and closing procedures. We stand ready to serve you promptly in production-line emergencies. Call Canco First!



Visit us, Booths 241 and 245, at the 19th AMA National Packaging Exposition, Chicago, Navy Pier, April 24-27.

Young Criticizes G-11 Comments

RUSSELL H. YOUNG, president of Davies-Young Soap Co., Dayton, Ohio, takes Soap & Sanitary Chemicals to task for an editorial on the new G-11 germicidal and deodorant soaps which appeared in the March issue. Mr. Young in a letter to the editor stated in part:

"I have just started to peruse your March issue, and as I idly turn the pages, I come to page 35 where the third editorial seems to point the finger of scorn directly at us—at least I compliment ourselves on thinking that you must refer to us when you say ". . . a G-11 liquid soap by one of the largest potash soap specialists has recently put in an appearance."

Further, you make the statement that had "Dial" been a flop, these new arrivals on the scene would have been conspicuous by their absence. In the first place, if you are referring to "Dysept" I think that you have missed the whole idea. We are not selling "Dysept" as a deodorant soap—it is definitely an antiseptic. Further, we have worked with G-11, and before that with G-4, for a number of years before we developed the product to what it is today. As an antiseptic soap, it has very definite use in industry as well as hospitals, clinics, institutions, etc.

You heard Dr. Scheele say that industrial dermatitis was the No. 1 problem of industry today. "Dysept" actually reduces this industrial hazard. This has been proved by independent medical research, and it has been proved by actual use in industrial plants. We are still conducting work in industrial plants and contemplate having some further original work done on this product. We are not worrying about the deodorizing characteristics of "Dysept." We don't care how the workmen in the plants smell, if, through the use of "Dysept," they can avoid industrial dermatitis.

We are glad to see that you referred to the soaps containing G-11, but I do think that you might have done it in a little different manner—one which would not point the finger of scorn at these new developments, but which would mention, even in a mild way, their great possibilities in industry. Antiseptic soaps have been sought for many years, and now they have arrived. And I mean antiseptic, both bactericidal and bacteriostatic. The fact that these soaps are effective is evident in all the research work which has been done on them.

And with that, I close. I will be in New York the latter part of next week. You better run like hell!"

Editor's note: We fear that we are being blamed for an intent which was far from our thoughts, namely pointing "the finger of scorn" at these new developments. And mention of

liquid soaps containing G-11,—yes, we did have in mind "Dysept,"—was more or less incidental to show that the idea was not confined to cake toilet soaps alone, and certainly with no thought of belittling this important development in industrial dermatitis reduction. Maybe we can be accused of needling the imitators of "Dial" with our "sincerest form of flattery" comment, but that was offered as something we hoped would be accepted in a jocular vein. R. H. Young is 6'-4" and his closing suggestion could be taken literally.

P&G Chi. "Dividend Day"

More than 500 Chicago employees of Procter & Gamble Co., with their families, celebrated "Dividend Day" recently with a party held in the Lake View public high school auditorium. Payments to the Chicago area employees under the 63-year-old P. & G. profit sharing plan, totalled about \$78,000, according to L. E. Strub, superintendent of the Chicago factory.

Packaging Exposition

A conference on packaging, packing and shipping will be held concurrently with the 19th National Packaging Exposition at the Navy Pier in Chicago, Apr. 24-27, it was announced recently. More exhibit space has been sold for the 1950 than for last year's exposition, according to the American Management Association, which sponsors the affair.

Reeves Ford Sales Hd.

Robert L. Reeves was recently appointed general sales manager of the J. B. Ford division, Wyandotte Chemical Corp., Wyandotte, Mich. He was formerly in charge of store merchandising for B. F. Goodrich Co., Akron, O.

Krebs New Lueders Vet

Henry Krebs, of the transportation department of George Lueders & Co., New York, recently became the 43rd member of the company's veterans' organization upon completing 25 years with Lueders. He was honored with a luncheon at the Drug & Chemical Club on Feb. 7, at which time he was presented with a number of gifts.

New Co-op Detergent

A new, heavy duty, built detergent, bearing the trade name "Breakwater," was placed on the market recently by National Cooperatives, Inc., Chicago, central buying agency for a number of regional farmer and urban consumer cooperatives in the U. S. and Canada. It is recommended for general laundry use and for fine fabrics, dishes, household cleaning, etc. It is said to be similar to familar proprietary detergents on the market, and is being distributed in specially designed cartons under the Co-op brand name through cooperative store outlets.

Sharples Elects Kendall

Paul Kendall, executive vicepresident since 1941, and with the firm for 23 years, was recently elected president of Sharples Chemicals, Inc., Philadelphia. He is also president of Sharples-International Corp., and a member of the board of Sharples Corp. P. T. Sharples, president since the founding of the company, was elected chairman of the board. L. H. Clark assumes the position of vice-president and continues in charge of production.

Bristol-Myers Asst. Treas.

Grenville P. Thom, credit manager for the past 22 years, was recently elected assistant treasurer of Bristol-Myers Co., New York. He will continue in his capacity as credit manager.

MacDonald Heads Houghton

William F. MacDonald was recently elected president of E. F. Houghton & Co., Philadelphia, succeeding Major Aaron E. Carpenter, who has been elected chairman. Mr. MacDonald continues as treasurer. Named to the board was Dr. James T. Eaton, manager of research.



The trend is toward better smelling products

Manufacturers are learning that, whatever their product, it sells better if it smells better.

In the field of sanitary and allied products there is still great room for improvement in this respect and among the Schimmel perfume compounds* there is a satisfactory solution to each such odor problem.

Our perfume laboratory has developed many masking agents and perfumes for all types of industrial and semi-industrial purposes such as laundry and dishwashing compounds, detergents, air purifiers, sprays, etc.

*Perfumes in the sense of supplying an agreeable odor,—NOT a "perfumy" note. Actually many of our perfume compounds are designed only to MASK the basic odor of the product, ridding it of any unpleasant effect and replacing it with a fresh clean note.

We have chemists who know **your** problems.

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RAW MATERIAL NAME IN A RESULT S

As of April 5, 1950

A LTHOUGH there have been few changes in prices of fats and oils in the past week, the record over the past month shows increases almost all along the line. Tallow remains the exception, and its price has been unchanged for about the past six weeks. It is quoted at 6% cents for the fancy grade, up one and one-half cents over the price of a year ago, but the same as on about this date in March.

With copra prices pushing higher, up \$5 a ton in the past week, it would seem coconut oil prices will advance still further. The oil is now quoted at 15 3/4 cents, crude basis Pacific Coast. With the tax and transportation charges tacked on, the differential between tallow and coconut oil is around 12 cents. The latest copra figure, incidentally, is \$212.50 a ton on the Pacific Coast.

Lard, one of the few fats to register any price change in a week is up fractionally to 11.10 cents, as compared with 11.05 cents in the closing days of March. The price early in March was listed as 10.80 cents, which was higher than the previous month's quotation. Lard is probably the only fat now selling below the price of one year ago.

Cottonseed oil improved upon its early March price by one-half cent and is currently selling for 13½ cents a pound, which is two cents over what it was bringing one year ago. Another vegetable oil, corn, is up ¼ of a cent to 14 cents, as compared with the Mar. 8, figure. A year ago corn was listed at 11½ cents.

Soybean and peanut oils are both on higher ground now than reported on a month ago. Soybean is now 13 and peanut oil 15 cents a pound, whereas last month they were listed at 12½ cents and 14½ cents, respectively. Early in April, 1949 soy-

bean oil was quoted at 11 cents and peanut oil 12 cents.

In general, while fats and oils prices are higher than during the comparable period in March, the advances made in the past 30 days or so are not as great as those recorded in the February-March period.

The stability of tallow prices is reflected in the fact that 88 per cent tallow chip soap, ranging up from about 10½ cents a pound in car load lots, has not fluctuated pricewise in two or three months. The lack of activity in tallow prices accounts also for generally unchanged prices of soaps at the wholesale and retail levels.

U. S. exports of specified fats, oils and oilseeds (in terms of oil) increased rather substantially in January, 1950, as compared with the same month a year ago. In January of this year, exports totaled 154.8 million pounds, as against 114.6 million pounds in January, 1949. Among those oils and fats, exports of which were larger in January, 1950, were tallow, lard, soybean and cottonseed oils.

Factory production of leading fats and oils dropped in February from the January levels, according to a recent report of the Bureau of the Census of the U. S. Dept. of Commerce. Crude coconut oil production in February was put at 32,381,000 pounds, as compared with 46,743,000 pounds in the previous month. Consumption was also off, and stocks were higher. Refined coconut oil production was down slightly in February, as compared with January; consumption rose slightly, but stocks decreased from 9,893,000 pounds to 8,446,000 pounds.

Inedible tallow production and consumption were lower in February than in January. Stocks increased about four million pounds in February, as compared with the previous month.

A report that the United States

had offered to buy the entire exportable surplus of Ceylon's coconut oil until the end of June was published by the Journal of Commerce late last month, and indicated that the Federal Supply Service was willing to accept price quotation from anyone having coconut oil to sell. The U. S. purchased no coconut oil from Ceylon last year, but in 1948 acquired 90,000 tons of Ceylon's exportable surplus of the oil. It is estimated that Ceylon has an annual exportable surplus of about 100,000 tons of coconut oil.

This activity on the part of the government in purchasing coconut oil for strategic stockpiling is having a very bullish effect on coconut oil prices. It may also account for the specific exemption made by the Secretary of Agriculture in an order of his banning the import of certain fats and oils.

Exports of copra from the Federation of Malaya in January of this year declined to 781 long tons, as compared with 1,816 in December, 1949. Coconut oil exports from the federation in January amounted to 3,848 tons, as against 3,972 in December of last year. Palm oil production in Malaya increased to 50,561 tons in 1949 from 45,257 tons in 1948 and 39,115 tons in 1947, according to recently released statistics. Palm kernel production last year amounted to 10,459 tons, as compared with 8,471 tons in 1948 and 5,737 tons in 1947.

The continued shortage of chlorine was highlighted recently with the announcement by Diamond Alkali Co. that it had raised its tank car price by 20 cents per 100 pounds, effective April 1. Other producers indicated that they would probably follow Diamond's action.

Although liquid caustic polish is not slow in being shipped, the dry form is reported tight, as a result of the potash strike earlier in the year.

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TRADE MARKS

THE following trade-marks were published in the March issues of the Official Gazette of the United States Patent office in compliance with Section 6 of the Act of February 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, a fee of ten dollars must accompany each notice of opposition.

A.B.C.—This for shoe polishes. Filed Dec. 30, 1948 by Griffin Manufacturing Co., Brooklyn. Claims use since September, 1908.

Detrex—This for rust removers. Filed Jan. 14, 1948 by Detrex Corp., Detroit. Claims use since Feb. 26, 1936.

Nu Way—This for disinfectant. Filed Sept. 29, 1948 by Nu-Way Products Co., Bristow, Okla. Claims use since Oct. 19, 1940.

Cities Service—This for insecticides. Filed Oct. 28, 1948 by Cities Service Oil Co., Bartlesville, Okla. Claims use since May, 1929.

Crack-weld — This for crack filler. Filed June 5, 1948 by Paraffine Companies, San Francisco. Claims use since April, 1946.

Sweeping the Nation—This for sweeping compound. Filed June 28, 1948 by Badger Plug Co., Appleton, Wis. Claims use since Apr. 22, 1948.

Union—This for dry cleaning fluid. Filed June 14, 1948 by Union Oil Co. of California, Los Angeles. Claims use since Oct. 17, 1925.

White-O—This for car wash. Filed Sept. 28, 1948 by White-O Products Co., Cincinnati. Claims use since Mar. 11, 1938.

Birthright—This for shampoo. Filed Dec. 3, 1948 by Sell's Specialties, Inc., New York. Claims use since Aug. 27, 1948.

Zenith—This for floor sealer for wood. Filed Dec. 27, 1948 by Marshall-Wells Co., Duluth, Minn. Claims use since Mar. 1, 1894.

West—This for electric insecticide atomizer. Filed Apr. 12, 1948 by West Disinfecting Co., Long Island City, N.Y. Claims use since Nov. 23, 1946.

Scan—This for industrial polishing wax for floors, etc. Filed Sept. 27, 1948 by S. V. Cain, Inc., Peoria, Ill. Claims use since Jan. 8, 1947.

Pine-Sol—This for liquid composition for use as general household cleaner and disinfectant. Filed Feb. 22, 1950 by Miller Products Co., Jackson, Miss. Claims use since 1929. Pin-O-Sol—This for disinfectant. Filed Apr. 13, 1948 by Southern California Disinfecting Co., Los Angeles. Claims use since Sept. 1, 1918.

Moth-O-Matic—This for moth preventive. Filed June 14, 1948 by Puro Co., St. Louis. Claims use since June 4, 1948.

Merrit—This for fly spray. Filed July 28, 1948 by Merrit Products Co., Paris, Tenn. Claims use since Jan. 30, 1942.

Geniphene—This for parasiticides. Filed Sept. 3, 1948 by Allied Chemical & Dye Corp., New York. Claims use since June 15, 1948.

Black Flag—This for insecticides and disinfectants. Filed Dec. 28, 1948 by Boyle-Midway, Inc., Jersey City, N. J. Claims use since Jan. 31, 1946.

Airex—This for wick type household deodorant. Filed Jan. 17, 1949 by Selig Co., Atlanta. Claims use since Sept. 24, 1948.

Rex—This for room deodorant. Filed Jan. 18, 1949 by Rex Research Corp. Toledo. Claims use since June 15, 1948.

Hercules—This for active chemical ingredient for use in manufacturing insecticides. Filed Feb. 12, 1949 by Hercules Powder Co., Wilmington, Del. Claims use since Feb. 1, 1949.

R.B.X.-1495 — This for roach and water bug killer. Filed Feb. 21, 1949 by John Sexton Co., Chicago. Claims use since Jan. 19, 1949.

Micro-Flosul—This for insecticides. Filed Feb. 24, 1949 by Crystal Chemical Corp., Hagerstown, Md. Claims use since Dec. 20, 1947.

Freon-115 — This for propellants. Filed Mar. 8, 1949 by Kinetic Chemicals, Inc., Wilmington, Del. Claims use since Dec. 21, 1948.

Freon 218 — This for propellants. Filed Mar. 8, 1949 by Kinetic Chemicals, Inc., Wilmington, Del. Claims use since Dec. 14, 1948.

Pyrenone — This for insecticides. Filed Mar. 8, 1949 by U. S. Industrial Chemicals, Inc., New York. Claims use since Mar. 15, 1941.

"Kolor-Brij"—This for paint brush cleaner. Filed Aug. 15, 1949 by Brush-Save, Inc., Greendale, Wis. Claims use since Dec. 9, 1946.

Citraseptic—This for antiseptic powder. Filed Dec. 18, 1948 by Zonite Products Corp., New York. Claims use since Nov. 11, 1948.

Glycolizer—This for vaporizer devices for emitting glycol vapor. Filed Nov. 19, 1948 by Glycolizer Corp., New York. Claims use since Oct. 4, 1948.

'evidents'—This for dentifrice. Filed July 16, 1948 by Evidents Corp., New York. Claims use since May 1, 1948.

Merrit—This for tooth paste. Filed Jan. '28, 1948 by Merrit Products Co., Paris, Tenn. Claims use since Jan. 30, 1942.

"Swipe"—This for soap. Filed Sept. 10, 1947 by Beaver Home Products Co., Camden, N. J. Claims use since June 25, 1947.

Lik — This for liquid floor cleaner. Filed Jan. 27, 1949 by Mars Chemical Co., Tonawanda, N. Y. Claims use since Mar. 24, 1948.

Antarate — This for surface active agents. Filed July 1, 1948 by General Aniline & Film Corp., New York. Claims use since May 14, 1948.

Garden Witch—This for insecticide. Filed Jan. 18, 1949 by Interstate Medical Co., Kingsley, Ia. Claims use since June 1, 1935.

B&A Co.—This for polishing cloths. Filed Dec. 8, 1948 by B. Altman & Co., New York. Claims use since 1915.

Kord Crownette Concen-Creme

This for shampoo. Filed Apr. 1,
1947 by Kord Cosmetic Co., Dayton,
O. Claims use since Oct. 1, 1946.

Hooker Advances Edwards

John P. Edwards was named recently as supervisor of product application by the Hooker Electrochemical Co., Niagara Falls, N. Y. In his new capacity Mr. Edwards will coordinate activities of research and sales in this direction.

Mr. Edwards is a chemical engineer, was graduated from the University of Minnesota in 1940, when he joined Hooker.

Wallace Joins Pepsodent

Dr. Donald A. Wallace, associated with the American Dental Association for the past 11 years, was recently appointed assistant research manager of the Pepsodent Division of Lever Brothers Co., Chicago.

CD & CA to Hear Watson

The next regular dinner meeting of the Cincinnati Drug & Chemical Association will be held on Friday, April 28th, at 6:00 P.M. at the Hotel Alms in Cincinnati. Kenneth S. Watson, ass't. director of the Ohio River Sanitation Commission, will discuss various aspects of purification of water, anti-pollution along the Ohio River, and industrial progress in the Ohio River Valley.



At. A. that

we weren't born yesterday...

or too many yesterdays ago!



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BIDS AND AWARDS

GPO Deodorant Bids

Bids on 400 pounds of perfumed deodorant were received in a recent opening for miscellaneous supplies by the Government Printing Office, Washington, D. C., from the following firms among others: Industrial Distributors, Chicago, 24.6 cents; Uncle Sam Chemical Co., New York, 22 cents; Dixie Janitor Supply Co., Washington, D. C., 24 cents; West Disinfecting Co., Long Island City, N. Y., 70 cents; United Sanitary Chemical Co., New York, 24 cents per pound.

ASO Steam Cleaner Bids

Steam cleaner bids were received in a recent opening for miscellaneous supplies by the Navy Department, Aviation Supply Office, Philadelphia, from: Phipps Products Corp., Boston, item 1a, 8.25 cents a pound; 2, 9.4 cents; Turco Products, Los Angeles, item 1a, 8.56 cents a pound; b, 8.45 cents, and 2, 9.87 cents; Wyandotte Chemicals Corp., Wyandotte, Mich., item 1a, 8.5 cents a pound; b, 9.53 cents; R. M. Hollingshead Corp., Camden, N. J., item 1a, 10.66 cents; b, 12.14 cents, and 2, 9.79 cents; Cee-Bee Chemical Co., Los Angeles, item 1b, 9.11 cents; Virginia-Carolina Chemical Corp., Richmond, Va., item 1a, 8.49 cents, and 2, 7.49 cents.

F. S. S. Soap Awards

In a recent opening for miscellaneous supplies by the Federal Supply Service, Washington, D. C., Swift & Co., Chicago, and Harley Soap Co., Philadelphia, received bids on soap items 51S-1674-10 and 51S-1716, respectively. The Swift bid was 9.98 cents, and that of Harley Soap Co. was 6.95 cents.

Phila. ASO Polish Bids

The following bids were received on an unspecified quantity of polishing compound in a recent opening for miscellaneous supplies by the Navy Department Aviation Supply Office, Philadelphia: Carlisle Chemical and Manufacturing Co., Brooklyn, item 1a, 78 cents a quart; b, 88 cents; International Metal Polish Co., Indianapolis, Ind., item 1, 31.5 cents a quart; b, 32.5 cents; J. A. Tumbler Laboratories, Baltimore, item 1a, 24.89 cents; b, 39.39 cents; R. M. Hollingshead Corp., Camden, N. J., item 1a, 48.54 cents a quart; b, 53.2 cents, alternate 1a, 42.54 cents and b, 59.7 cents.

Rifle Bore Cleaner Award

Amco Chemical Corp. in a recent opening by Raritan (N. J.) Arsenal, received the award on 22,-806 gallons of rifle bore cleaner with bid of 46.4 cents. The freight per gallon was listed as 17.39 cents for Herlong, Calif., and 1.71 cents for Nixon, N. J.

P. O. Laundry Soap Bids

Bids on 40,000 pounds of laundry soap were received in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C., from the following: Pioneer Soap Co., San Francisco, 4.8 cents per pound; Standard Soap Co. of Camden, Camden, N. J., 5.7 cents; Newell Gutradt Co., San Francisco, 4.3 cents; Swift & Co., East Cambridge, Mass., 5.24 cents; Armour & Co., Babbitt, N. J., 5.63 cents; Cudahy Packing Co., East Chicago, Ind., 11.6 cents; Colgate - Palmolive - Peet Co., Jersey City, N. J., 5.787 cents; Gillam Soap Works, Fort Worth, Texas, 4.9 cents; Unity Sanitary Supply Co., New Yo.k, 10.52 cents; Peck's Products Co., St. Louis, 4.77 cents; M. Werk Co., Cincinnati, 6.27 cents, and North Coast Chemical & Soap Works, Seattle, Wash., 7.032 cents.

Low Floor Wax Bids

Among the low bids received on an unspecified quantity of floor wax in a recent opening of miscellaneous supplies by the Federal Supply Service, Washington, D. C., were those of the following: Trio Chemical Works, Brooklyn, 12.4 cents; Twin City Shellac Co., Brooklyn, 16 cents; American Wax Co., College Point, N. Y., 16.2 cents; Windsor Wax Co., Hoboken, N. J., 16.2 cents; Wilbert Products Co., New York, 16.25 cents; Kem Products Corp., Brooklyn, 13.5 cents and Buckingham Wax Co., Long Island City, N. Y., 14.2 cents.

Water Softener Award

The award on 27,500 pounds of water softener in a recent opening for miscellaneous supplies by the Army Engineer Corps, Chicago, went to Dearborn Chemical Co., Chicago, with a bid of 10.17 cents.

DDT Insecticide Bids

Among the bids received on an unspecified quantity of DDT insecticide in a recent opening for miscellaneous supplies by the New York Navy Purchasing Office, New York, were those of the following: Kolker Chemical Works, Inc., Newark, N. J., 40 cents; Michigan Chemical Corp., St. Louis, Mich., item a, 41 cents; b, 44.7 cents; c, 42.5 cents; d, 42.9 cents; e, 41.9 cents; Bri-Test, Inc., New York, item a, 35.8 cents; b, 37.8 cents; c, 34.8 cents; d, 37.3 cents, and e, 34.4 cents; R. J. Prentiss & Co., New York, item a, 36.85 cents; b, 39.88 cents; c, 36.12 cents; d, 38.46 cents, and e, 35.81 cents; Stauffer Chemical Nico - Dust Manufacturing Division, New York, item b, 32.24 cents; d, 36.25 cents; William Messer Corp., New York, item b, 60 cents.

AQMC Grit Soap Awards

Awards on grit soap in cake form in a recent opening for miscellaneous supplies by the Army Quartermaster Corps, New York, went to Day & Frick Co., Philadelphia, with bids of 5.3 cents on item a, 4.45 cents on b and c, and 4.7 cents on d. Sapolio Products Co., New York, received the award on item e with a bid of 9.007 cents and on items f and g with bids of 4.991 cents and 5.95 cents, respectively.

With Lever 26 Years, Dies

Emma Louise Stanton, 61, a secretary in the Detroit office of Lever Brothers Co., New York, for 26 years, died recently, in Providence Hospital.

WE RECOMMEND THE USE OF

SYNTHETIC PATCHOULI 1474 ARTIFICIAL GERANIUM 5-T-2

WHENEVER THE NATURAL OILS ARE TOO COSTLY

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ESSENTIAL OILS, AROMATIC CHEMICALS AND PERFUME BASES
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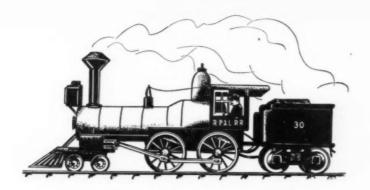
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Since the Days of the "Iron Horse"...

CHECK YOUR NEEDS FROM THIS LIST

VEGETABLE OILS

Babassu Olive
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QUADRAFOS

granular and beads. A stable polyphophate for water conditioning and mild but effective detergency.

AIR DRYETTES CALCIUM CHLORIDE THE MAYPONS

Unique surface active agents; prolific foam; high detergency and emulsifying powers: suitable for cosmetic and industrial use.

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SINCE 1838, we've been supplying the nation's "soapers" with basic raw materials—everything from Acid oils and Adeps Lanae to Waxes and Wetting agents.

If you need one drum in a hurry—or carloads on contract—give WH&C a ring. You'll probably enjoy doing business with this 110 year old organization . . . a firm that believes in applying the Golden Rule to business as well as to private life.



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MAYPON MAYPON MAYPON MAYPON MAYPON

for sudsing and deterging purposes...

MAYPON SUPER K

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PROTEIN-FATTY ACID-CONDENSATION PRODUCT

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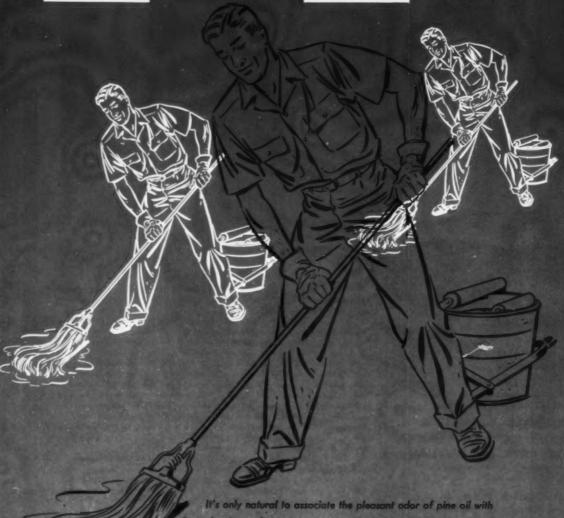
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PINEOIL

SMELLS CLEAN...CLEANS CLEAN



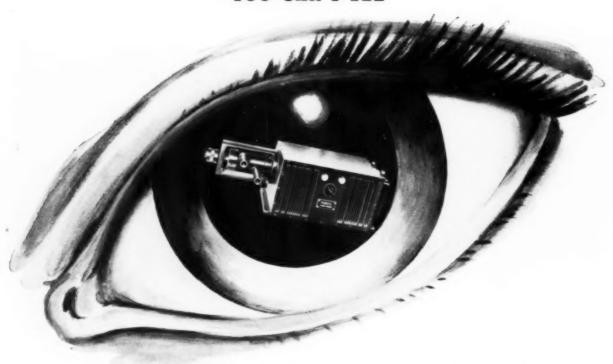
It's only natural to associate the pleasant odor of pine oil with cleanliness. Pine oil is nature's own disinfectant and cleanser. Pine oil disinfectants not only smell clean, they have excellent germicidal properties. "Hercules" Pine Oils are easily mixed, stable, quick-acting, non-staining, and safe to handle. Low in cost, they are economically attractive wherever disinfectants are required. It will pay you to re-evaluate the savings and sales-appeal of pine oil disinfectants and soaps.

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NCSO-2

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DETECTS suspended solids in liquids or gases in concentrations of less than one part per million.

SIGNALS when a predetermined acceptance point is exceeded.

DIVERTS. Will actuate a valve to divert flow until acceptance point is regained.

RECORDS. Will actuate a recording device to indicate variations in the amount of solids in suspension.

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Full details about the PURIFIL together with charts, specifications, operational data and examples of specific applications are contained in our bulletin No. 512. Write for your copy today. There's no obligation.

You don't have to guess. You can know . . . instantly . . . accurately . . . when filtration is complete . . . when a filter cloth breaks . . . when

suspended solids vary.

It's easy with the Purifil on the job. This photo-electric device will detect and report variations in cloudiness in concentrations as low as ½ part per million. Its delicate measurements and accuracy match laboratory standards. Yet the Purifil is not a laboratory instrument. It's a rugged, precision-built production tool designed for day-in, day-out, round-the-clock operation.

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and passes continuously through the inspection chamber. The dial is set to a predetermined acceptance point which may be interpreted in parts per million. A green light shows until acceptance point is exceeded.

If exceeded, a red light appears, an alarm sounds, or a relay actuated remote indicator, recording meter, proportional controller or cut-off valve is

The Purifil has many practical applications in the processing of edible fats, fatty acids, soaps, detergents, dyes, cosmetics, oils and numerous other products. Daily production operation has fully demonstrated its amazing accuracy and dependability resulting in continuous control of product quality and substantial savings in man hours. Want details? Write today . . . no obligation.

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MULTIPURPOSE COMPONENT OF HOUSEHOLD FORMULATIONS



Write Dept. K for prices, technical information and samples of this non-ionic surface active agent.

Use for:

- Household detergent formulations for dishwashing, fine fabrics and general cleaning
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- Automatic dishwashing formulations by addition of defoaming materials



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HOUCEIN MACHINERY COMPANY, INC.

Manufacturers of Soap Making Equipment for over Three-Quarters of a Century.

PRODUCTION SECTION

Chemical Water Conditioners

HE efficiency of household cleansers is controlled to a large extent by the water hardness. To allow full benefits of the cleaner, mildly alkaline water softeners are often included in their formulation. The use of soap in hard water results in expensive, unsatisfactory operations whether the water supply is domestic or industrial.

Water hardness is defined as the extent to which water resists the formation of lather, and is due to the presence of metal salts, particularly those of calcium and magnesium. Hardness may be temporary or permanent; the former being due to dissolved carbon dioxide, which solubilizes the calcium and magnesium salts and may be removed by boiling; permanent hardness, which is due to the presence of calcium and magnesium sulfates and chlorides, may be removed by special treatments.

Softening is effected by deionizing, i. e., by use of materials which will exchange ions with the insoluble compounds forming soluble salts; artificial and carbonaceous zeolites are prominent in such water softening materials.

Common faults in water softening formulations are excessive alkalinity, lack of cold water solubility and caking of the products, resulting in production of poor packaged products.

The most common water softening material is washing soda or sal soda; also in this catego: y is sodium carbonate monohydrate, which is noncaking and forms a free flowing product. Included in the carbonates is "sesqui" or sodium sesquicarbonate, Water softening products may be classed in about seven different groups. The most common material is washing soda or sal soda. Quaternaries are finding increasing usage.

which has high stability, ready solubility and a mild action on the skin.

The phosphate group of softeners includes the tri-sodium phosphate, which has a high suspending power of soils, and sodium hexametaphosphate, which in addition to preventing the precipitation of calcium and other metallic ions, serves also to redissolve such lime salts as have been precipitated previously. One of the disadvantages in the use of hexametaphosphate is its hygroscopic character, which may cause caking of the product.

A comparison of several water softening compounds indicates that sodium bicarbonate and borax are most mild, the phosphates and carbonates are next in pH value, and the silicates have the highest alkalinity.

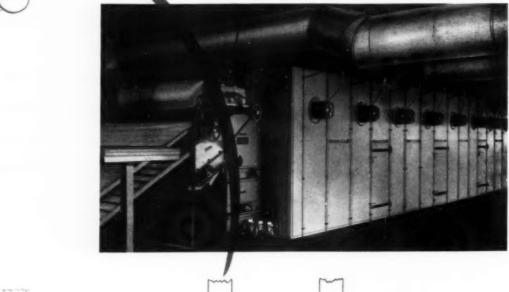
Sodium phosphate is noted for its free rinsing properties. Tetra sodium pyrophosphate, "Calgon," and sodium tetrapyrophosphate are noted for their dispersive and lime salt sequestering action. Tests with this last group of agents in combination with alkalis indicate a lowering in sequestering effect at higher temperatures and easier sequestering of magnesium salts as compared to those of calcium.

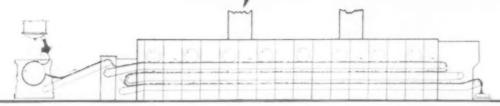
Use of cationics of the quaternary ammonium type is increasing in industrial bottle washing and similar cleansing processes. Their use is limited in household cleansers due to an incompatibility with soap and high concentrations of silicates and phosphates. Synthetic detergents, on the other hand, are very versatile, adaptable to water softening, dishwashing, and textile cleansing.

Incorporation of the water softening compounds in cleansers is affected by the physical form of the final product. Although the softeners may be best accepted in powder form, dishwashing preparations and other cleansers are offered frequently as liquids. Detergent briquettes and tablets are also popular in the market. The successful manufacturer must know what the public wants, what the shortcomings of the products offered are, and how these may be improved to conform with public demand. A study of existing patents and formulas may encourage new ideas on the subject.

A detergent briquette for use in mechanical washing operations is prepared from a mixture of sodium carbonate and trisodium phosphate, sodium borate, a polyphosphate such as sodium tetraphosphate and .25-5 per cent of an alkali-soluble anionic, cationic or non-ionic synthetic detergent such as sodium lauryl sulfate, lauryl

HUMIDITY CAN RAISE CAIN in soap drying, too...





REQUIREMENT: Correct humidity must be maintained within the drying system for the exhaust air to carry away moisture from the soap as quickly as it diffuses to the surface of the ribbons.

THE PROCTOR ANSWER: A flexible exhaust system is provided in the design of the drying chambers of the Proctor automatic flake soap system, so that humidity is kept under rigid control. Complementary to this accurate humidity control is proper temperature adjustment in the drying enclosure. Dryer temperatures are carefully adjusted to the points where the necessary water will be removed from the soap without melting it in the early stages or delivering it too hot when completely dried. Temperature in each dryer compartment is automatically controlled by an air operated, recording type temperature control. The temperature control system

and the exhaust system which governs humidity, work hand in hand to provide soap that is uniformly dried to a predetermined moisture content. Such control of temperature, humidity and the resultant quality control, is one more reason why the Proctor automatic flake soap system has been so tremendously successful and the choice of the nation's leading soap manufacturers.

Learn how this Proctor automatic "precision engineered" flake soap system may be employed profitably in your plant by writing today for details.

WORTH THINKING ABOUT

Let Proctor engineers show you in black and white how the over-all efficiency and completely automatic operation of this system reduce production costs.



Much Proctor drying equipment and textile machinery is covered in full or in part by patents or patents pending

Proclor & Schwartz, Inc.

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dimethyl benzyl ammonium chlorite or hydroxy ethyl laurate.

A stable detergent paste, well suited for all-purpose use, is claimed to be obtained by beating together a major amount of sodium triphosphate, water and various synthetic detergents. The incorporation of .5-1.5 per cent pine oil and fluorescein into such compositions is recommended.

Water softening products may be classed into several general groups: 1) washing soda, powdered borax; 2) household ammonia; 3) powdered ammonia, consisting of ammonium carbonate with sodium carbonate; 4) mixtures of alkaline water softening agents; 5) mixtures of water softening agents together with additions of soap or synthetic detergents; 6) alkali solutions with synthetic detergents and possibly methyl or carboxymethyl cellulose, and 7) water softening cakes, tablets, etc., consisting of alkalis with binders of sodium silicate, soap, china clay, etc.

Water softeners for toilet use should be mildly alkaline, incorporating sodium sesquicarbonate, mixtures of dried powdered sodium carbonate or sodium bicarbonate. Small additions of synthetic detergents would be suitable; the product could also be improved by attractive tinting and perfuming. Soap, Perf. & Cos. 23, No. 1, 45-49 (1950).

Continuous Hydrolysis of Fat

THE Victor Mills process, which is very simple and effective, consists of the continuous hydrolysis of blended oils and fats in long columns of small diameter. In its most recent form as used in a British factory, oil and steam are introduced above the interface between oil and sweetwater, near the base of the column. The oil carries the catalyst, zinc oxide and zinc dust, previously reacted with free fatty acids, to form zinc soaps which dissolve in the fat at 220°F. Countercurrent steam at about 480°F., is pumped to the top of the column, entering through a comminuting ring.

By virtue of their relative densities, oil and water travel oppositely through the column. At about 600 p.s.i. and 500°F. rapid splitting proceeds to over 99 per cent fatty acids. Fatty acids issue from the top of the column continuously to a chamber, at atmospheric pressure, where water vapor is flashed off. Sweetwater, containing 15-20 per cent glycerine, passes from the base of the column, through a regulating valve, to the evaporators.

Because of the corrosive effect of the fatty acids under these conditions, heavy construction is necessary throughout the high pressure system. The columns each produce about three tons per hour of fatty acids and are about 60 feet high and 22 inches in internal diameter, with 2.5 inch stainless steel walls. They are costly items.

From the basic principles, it would appear that equal results could be obtained by less expensive means with lower working temperatures and lower pressures. In Britain, diethylene glycol is used with soap and synthetic detergents as an antidusting agent. J. Seaman, Manufacturing Chemist 20, 130-3 (1949).

Detergency Evaluation

Laboratory evaluation of detergency is made by use of soiled chopped fibers instead of the usual artificially soiled fabric test pieces. Slivers of cotton cloth are stirred in water with a paddle stirrer until disintegration into single fibers is complete. The mass of fibers is filtered and soiled with a mixture of graphite, liquid paraffin, and carbon tetrachloride. The fibers are washed by using a solution of the detergent under test in a laboratory plunger-type washing ma-They are rinsed and dried. chine. The dry pads can then be compared either visually or photometrically with blank pads or with pads containing a known amount of soiled fibers. Excellent reproducibility is achieved and considerable time is saved in making

tests as compared with the fabric-testpieces method. The main experiments have been with cotton, but wool and rayon can also be used. J. Powney and A. J. Feuell, *Research* (London) 2, 331-4 (1949).

Continuous Soap Method

The production of anhydrous soap and pure glycerol in high yield is claimed for a continuous process in which a solution of a fat in an inert solvent is caused to react continuously with a 20-50 per cent alkali solution in emulsion. The reaction occurs at an elevated pressure and a temperature below the melting point of the anhydrous soap. The fat, dissolved in 0.5-1.5 times its weight of solvent such as kerosene, naphtha, or xylene, is emulsified with 25-50 per cent of caustic soda solution and 12 parts to 100 parts of a fat-solvent mixture. The saponification is carried out in a coil of 0.25-inch tubing at 400°F. and 100 pounds per square inch. The fat-solvent mixture is passed through a preheating coil, in which the temperature is raised to 480°F. This step takes 25 seconds as contrasted to seven minutes for saponification at 400°F. The fat-solvent mixture is then sprayed into a vacuum chamber kept at 400°F. Soap powder is collected while the vapors are passed into two condensers, where glycerol and solvent are condensed in the first, and water is condensed in the second. After decantation of glycerol from solvent, the yield of free glycerol is 96.6 per cent. A form of apparatus is described. Industrial Patents Corp. British Patent No. 604,282; through Chem. Abs.

Scanning Detergency

The scanning of a number of standard soiled swatches of cloth on a turntable rotating at 78 r.p.m. or faster, with a Hunter reflectometer, yields the average reflectance of the set. The use of a glass plate to cover the cloth samples does not affect the reflectance measurement. Much time and work can be saved by application of the scanning technique to detergency tests employing multiple swatches. W. E. Thompson, J. Am. Oil Chemists' Soc. 26, 509-11 (1949).

DRYMET

THE ECONOMICAL DETERGENT SILICATE

Cowles DRYMET, anhydrous sodium metasilicate, is the most highly concentrated form of sodium metasilicate available. It is more economical to use, on the basis of both Na2O (alkalinity) and SiO2 (silicate) than any other type of hydrated or anhydrous detergent silicate, either compounded or by itself. DRYMET contains no water of crystallization.

DRYSEQ

THE ALL-PURPOSE DETERGENT SILICATE

Cowles DRYSEQ, anhydrous sodium sesquisilicate, is a medium pH alkaline cleaner which will do fast, dependable work at a low cost to the user. It is a white, free-flowing powder, quickly and completely soluble in hot or cold water-containing 56.75% Na₂O-making it an economical base material for compounding.

DRYORTH

THE HEAVY-DUTY DETERGENT SILICATE

Cowles DRYORTH, anhydrous sodium orthosilicate, is a powerful, speedy, heavy-duty cleaner with valuable penetrating and wetting-out properties, reinforced dirt-removing power and unusual emulsifying action. It is an anhydrous, free-flowing powdered silicate containing not less than 60% Na₂O, which may also be used as an economical constituent of high pH cleaning compounds.



THE MEDIUM PH DETERGENT SILICATE

Cowles CRYSTAMET is a pure, perfectly white, free-flowing granular pentahydrate sodium metasilicate with the normal 42% water of crystallization. Suggested for compounding when it is desirable to lower the concentration of a finished product. Readily soluble-chemically stable-easy to handle.

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containing complete technical information and suggested formulations.

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COWLES CHEMICAL COMPANY

HEAVY CHEMICALS DEPARTMENT . CLEVELAND 3, OHIO

ASTM Committee D-12 Meets, Elects Harris

AY C. HARRIS, Monsanto Chemical Co., St. Louis, was elected chairman of Committee D-12 of the American Society for Testing Materials, succeeding Fred W. Smithers, who resigned after officiating 14 years in this capacity, at the annual meeting of the committee, held March 22nd, in the Park Sheraton Hotel, New York.

Fred Krassner, Naval Clothing Depot, Brooklyn, was elected vicechairman, Harold R. Suter, Wyandotte Chemical Co., Wyandotte, Mich., was elected secretary, while the following were elected to the advisory committee: J. A. Woodhead, Colgate-Palmolive-Peet Co., New Jersey; Frederick Krassner, Naval Clothing Depot, Brooklyn, N. Y.; William G. Morse, National Assoc. of Purchasing Agents, N. Y.; G. P. Fulton, National Association of Dyers & Cleaners, Springfield, Md.; W. H. Koch, Mathieson Chemical Corp., Baltimore; V. C. Mehlenbacher, Swift & Co., Chicago, Ill., and R. E. Hauber, Procter & Gamble, Ivorydale, Ohio.

A report on diphase metal cleaning, and theory of detergency by Irving Reich, F. D. Snell, Inc., New York, highlighted the afternoon session, following the general meeting on March 22. Mr. Reich elaborated on the three general factors of soil removal, i.e.: 1) mechanical; 2) chemical, and 3) physical-chemical, considering the last factor in particular. Mechanical action is defined by physical work, as in the case of hand washing, agitation, or spray-jet action. It is present in all detergent reactions and is an important factor in commercial laundry operations. The chemical factor involves high octane forces on a molecular level, as in the case of the pickling of metal. It is useful when applicable, however such cases are not too common. The physical - chemical factor involves low octane molecular forces, is not strong enough to give stoichiometric reactions, and is illustrated by solutions and emulsification.

The mechanical factor, although always present, is highly in-

efficient. Only about one per cent of the work exerted actually goes into soil removal, the rest is lost in heat,



JAY C. HARRIS

agitation, etc. The third factor, i.e., physical-chemical, is controlled most readily, and offers means of control. Wetting, emulsification, preferential wetting, solution and dispersion are to be considered in the analysis of the physical-chemical action of detergency.

Wetting, as the word implies, is the "wetting" or coming in contact of the fluid with the dirty surface. In emulsification, efficiency is controlled by interfacial tension. Considering an oil film as the soil on a metal, detergency by emulsification results by reducing the thickness of the oil film. This is effected by the mechanical action of the bath against the oil molecules in the outermost layer of the film, eventually forcing the oil drops to break from the surface, thereby reducing the thickness of the film. Viscosity is an important factor in this type action, imparting a reduced efficiency when the soils have a high vis-

The third case of preferential wetting, involves actual displacement of the oil, yielding a perfectly clean metal surface. Mr. Reich described a Canvas Duck Test which measures displacement. In this test, a standard cloth is placed at the interface of oil and water, and the time required for the cloth to sink recorded as the basis of measurement.

Solution involves micellar solu-

bilization, while the fifth factor of dispersion, involves the forces to keep dirt in solution. Mr. Reich supplemented his report with graphs and charts, and answered questions from group members upon completing his paper.

Reports of the subcommittees were presented by the various chairmen. Members of D-12 voted to advance the tentative specification D929-47t for Borax to standard, as recommended by M. F. Graham, Colgate-Palmolive-Peet Co., N. J., chairman of S-4 on Alkaline Specifications. The committee also recommended that D928-47t for sodium bicarbonate be retained as tentative.

W. H. Koch, Mathieson Chemical Corp., Baltimore, Md., reported that subcommittee T-4, Special Detergents, will submit new analysis methods of sodium bicarbonate for sodium bicarbonate, sodium carbonate and water, in the next year.

Committee D-12 adopted two methods proposed by T-5, Physical Testing, reported by J. A. Woodhead, Colgate-Palmolive-Peet Co., New Jersey. One is the "Proposed Method for Determination of pH of Aqueous Solutions of Soaps and Detergents," and the other is the "Proposed Method of Test for Foaming Properties of Surface Active Agents." Work planned for the coming year by T-5 deals with methods of test on surface tension and interfacial tension.

Frederick Krassner, Naval Clothing Dept., Brooklyn, N. Y., chairman of S-1, Soaps, reported tentative specifications for chip or granular soap for low temperature washing, of low and medium titer, as well as tentative specifications for solid soap under the same conditions.

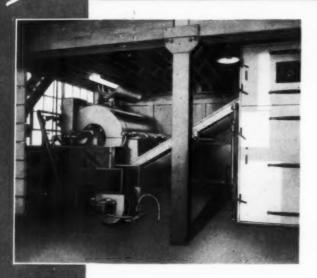
Sub-committee T-3, Dry Cleaning, is continuing on flash point determinations and reproducibility of the methods investigated. Tests thus far indicate the Pensky Martens tester to be appropriate for this determination. The Soap Analysis committee will work on borax and water insoluble determinations in soap.

Following the presentation of reports, committee D-12 adopted the (Turn to Page 163)

THE NEW SOAP CHIP DRYER by SARGENT



CHIP THICKNESS CONTROL



FOR INCREASED PRODUCTION

SARGENT'S New Soop Chip Dryer has flexible feed control and accurate chip thickness control-with three variable speed drives, for the rolls, for the feed apron, for the dryer conveyor. It has many other new features all designed to speed production at low operating cost.

The installation illustrated is at Standard Soap Co., Camden, N. J. Production is 2000 lbs. tallow base laundry soap chips per hour, with intake moisture of 34% and leaving moisture of 8%. Harder drying soap averages 1600 lbs. per hour. Chip thickness of 10/1000 to 12/1000 is consistent and even across full width of chilling roll and feed apron conveyor.

Please write for full particulars.

C. G. SARGENT'S SONS CORPORATION Graniteville, Massachusetts, U.S.A.



A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries

Dimethyl Phthalate, Popular Plasticizer, Available from U.S.I.

U. S. Industrial Chemicals, Inc., manufacturers of diethyl, dibutyl and diamyl phthalate now have available another excellent plasticizer, dimethyl phthalate. Widely used in the cellulose acetate field, dimethyl phthalate is a colorless, odorless liquid, soluble in all the common organic. solvents and oils except petroleum oils. In actual use, dimethyl phthalate is often combined with diethyl phthalate. U.S.L's high-purity product is finding wide use in plasticizing cellulose acetate sheeting and film, molding powders, and insulating lacquers.

Specifications

Acidity
Free acid as phthalic, not more than 0.01%

Color Water-white

Water
None, as shown by the absence of turbidity on separation when admixed with 19 valumes 10° heptane with aromatics not over 5%

Oder Odorless

Purity
Ester content as dimethyl phthalate, 99-100%

Specific Gravity At 20°/20°C-1.192-1.194

Trifluoroacetic Anhydride For Direct Esterification

A method of esterification that does away with the necessity of a two-stage process and makes possible a fast direct reaction between acid and hydroxy compound under mild conditions was reported on recently by university researchers. The new esterification process involves the use of trifluoroacetic anhydride and is described as giving yields of 60 to 90%.

Suitable for Self-Esterification of Hydroxy Acids to Yield Polyesters

Customary procedure in the past for syn thesizing esters from carboxylic acids and al-cohols or phenols was to treat the reactants for several hours in the presence of a strong mineral acid catalyst or to proceed by way of the acid chloride or anhydride. The new method appears to be suitable for self-esterification of hydroxy acids to yield polyesters.

New Assay for Quinine Is Faster, Simpler

A new spectrophotometric method for determining quinine, described as faster and simpler than the official chloroform extractiongravimetric method, has been devised. The researcher who developed the assay recommends it for control purposes in analyzing pure solutions of quinine encountered in processing operations or for analyzing intermediate or preliminary samples where official assay procedures do not have to be applied. The scientist states that the spectrophotometric method showed an average deviation of only ±0.4% from the gravimetric as an average of 20 determinations.

U.S.I. Launches 1950 Dairy Insecticide Program

Availability of Pyrenones Has Made Possible Tremendous Expansion in Use of Sprays for Direct Application to Animals

The season when fly control is the dairyman's chief concern is not so many months away, and so U.S.I. is launching its 1950 program to acquaint farmers, agricultural leaders, and insecticide manufacturers with the outstanding con-

Electric Heat for Pipes Proves Cheaper Than Steam

Use of tubular electrical heaters on storage tank pipe lines is reported to have reduced operating costs for a midwest oil company. Lines were formerly heated with steam to reviscosity of the stored fluid, but costs were high due to heat loss and uneven heat distribution. Electrical heaters are now clamped to the base of each storage tank and are wound around pipe lines and covered with protective layers of insulation to cut heat loss. Even distribution of heat throughout the pipe line is achieved through thermostatic control. according to the company.

Radioactive Phosphorus Aids in Metal-Spraying

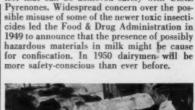
An unusual use for radioactive isotopes is in the application of molten metal to surfaces (as a protective coating) by means of an electric are pistol. An are is struck between two metal wires fed into the pistol. The are's heat melts the metal and a blast of air blows it away in the form of a spray. Ordinary air is not conductive and disrupts the arc. The problem is solved by ionizing air to make it conductive by first passing it over radioactive phosphorus.

Pressure-Welds Metals At Room Temperature

Welding metals by pressure at room tem-perature is reported possible now. Several types of non-ferrous metals, including aluminum, duralumin, copper, nickel, zinc, silver, and cadmium, can be cold welded by the new process. Its most important application is expected to be for cold welding aluminum. Experimental work on ferrous metals is reported

Publishes Safety Data On Hydrogen Sulfide

Publication of a chemical safety data sheet on hydrogen sulfide has been announced by a noted chemical association. Designed for use by management, supervisory staffs, and op-erating personnel, it is said to contain infor-mation essential to safe handling and use of hydrogen sulfide in transit, in the plant, and in the laboratory.



trol that can be achieved safely with



Pyrenone-type sprays are safe to use directly dairy cattle. They are non-toxic to warr blooded animals, will not contaminate milk, meat, or other animal products.

Pyrenones Provide Maximum Safety

Though amazingly effective in controlling dairy insects, Pyrenones are non-toxic to warm-blooded animals. They cannot be stored in butterfat of milk or the fatty tissues of the body. Even ridiculously large doses, fed di-rectly to test animals over a long period, have produced no ill effects. They will not contaminate milk, meat, or other animal products. This safety, coupled with the high insecticidal power of Pyrenones has made it possible to produce livestock sprays that are entirely practical for regular animal application.

Return to Direct Treatment of Animals with Protective Sprays

In the last few years, failure of surface spraying to solve the fly problem has led to a rapid increase in the use of protective sprays for animals. Conventional oil-type sprays and water emulsion sprays have enjoyed come-backs, and the one thing that has made possible this tremendous expansion in the use of livestock sprays has been the availability of Pyrenones. MORE

New-Type Synthetic Rubber

A new type of high-quality synthetic rubber is being made now from a turpentine derivative, scientists state. Main ingredient of the new elastomer is said to be isoprene. April

U.S.I. CHEMICAL NEWS

1950

CONTINUED

U.S.I. Dairy Insecticides

Protect Against Hard-to-Kill Horseflies

Pyrenone-type insecticides protect dairy animals, in the field as well as in the barn, against even the highly resistant horsefly or tabanid. They provide fast knockdown and high kill of horn flies, stable flies, houseflies, and other dairy insects. They are economicaldilutions as high as one part emulsifiable Pyrenone-insecticide to 39 parts water protect animals two weeks under normal conditions against horn flies.



Versatile Pyrenones are popular for insect control in milk rooms and other parts of dairy, farm, or ranch buildings, as well as for spraying cows and other livestock.

Many dairymen prefer Pyrenone-base insecticides because they can be had in oil-spray or emulsion forms, but Pyrenones are also available in wettable powders for those who prefer this form. Pyrenone insecticides can be used in any type of sprayer-hand gun, knapsack, aerosol, power sprayer, or steam vaporizer. They will not clog spray nozzles or corrode metal equipment, are non-staining, and will not harm paint.

Pyrenones' wide-range effectiveness makes them popular with dairymen for controlling a variety of farm, food-storage, and household pests. They are effective against roaches, silverfish, wasps, hornets, spiders, crickets, cheese skippers, ants, fruit flies, confused flour beetles, cadelles, and scorpions.

Precise Color Matching With New Instrument

A new precision color-matching instrument for textile, dye, and other industries is said to employ a combined electronic and optical computing system to simulate the response sensitivity and discrimination of the human eye, without the eye's variation in perception. Described as compact and light in weight, the instrument can be carried anywhere plant for on-the-spot sampling. Special preparation of samples is reported unnecessary in most cases since the device handles samples one-half inch in diameter and up.

The color matcher automatically accommo dates itself, it is claimed, to the level of il-lumination of the samples being compared. Its range is said to be such that sensitivity exceeds that of the human eye for variations in brightness of 10,000 to 1, permitting com-parison of samples reflecting only 2% to an accuracy of 0.5% of reflected light. The in-strument is equipped to evaluate tristimulus color values relative to standard white and has a direct reading scale from 0 to 100%.

The device has an accessory sample viewer so that before actual color measurements are taken samples can be examined to make sure surface conditions and illumination are comparable to visual requirements. The sample viewer is useful in making precise measure ments of many types of surface, especially where dark colors are encountered, the makers state.

Low-Cost Arthritis Drug **Yields Dramatic Results**

A new, cheap treatment for arthritis is said to have produced dramatic results in recent tests. Four patients were given the new treatment—injections of a synthetic adrenal gland hormone and vitamin C—and good results are claimed for three of the four cases. One patient, a fifty-five year old man who had been bedfast for six months is said to have walked ten minutes after his first treatment.

Doctors in charge of the treatments are optimistic but warn that it will probably be at least several months before final results are known. Enough drug for one daily treatment costs about \$2, according to the doctors, as compared with a cost of \$200 for an eight-day supply of another new arthritis drug, ACTH.

TECHNICAL DEVELOPMENTS

Further information regarding the manujacturers of these items may be obtained by writing U.S.I.

A new, extremely fast and efficient broiler that makes use of infra-red rays is said to cook steaks in 5 to 7 minutes, to require no preheating, and to be economical. It works on A.C. or D.C., does not smoke or spatter fat, and is easy to clean, the

Continuous indicating and recording of viscosity of hundreds of industrial liquids while under actual processing is reported possible with a new instrument, particularly adaptable to use in the textile, chemical, food, paper, plastics, and protective coatings industries. Viscosity range is reportedly 20 to 100,000 centipoises. (No. 560)

A flexible method of supporting lab apparatus is said to permit addition or removal of any support-ing rod, either vertical or horizontal without dis-mantling any other part of the frame. (No. 561)

A new-type rubber-to-metal adhesive is claimed to bond natural rubber, GR-S, nitrile rubber, and neoprene to steel, stanless steel, aluminum, zinc, magnesium, brass, and nickel. Bonds reportedly resist aging, solvents and oils, and boiling water.

A new goniophotometer, for measuring the man-ner in which flat specimens reflect and transmit light is said to be the first offered with tristimulus filters for measuring color as a function of il-lumination and direction of view. (No. 563)

A new cold liquid spray for cleaning electric moters, claimed to dissolve grease fast, evaporate quickly, and to be practically inert to ordinary electrical insulation, is easy to handle because of its low flammability and mild coxicity, the makers state.

(No. 364)

A new antifouling souting for preventing attachment of both sea and fresh water marine grass growths to boat bottoms is described as easy to apply and protects against barnacles, borers, annelids, algae, etc., it is reported.

(No. 365)

New odorants for rubber, both natural and synthetic, are reported available. They are for use in foam rubber products, rubber-containing adhesives, and such rubber goods as gloves, girdles, hot water bottles, etc. (No. 586)

A flexible paint for auto tops is claimed to strengthen and waterproof fabric, stop unravel-ing, and anchor loose threads. (No. 567)

For painting hard-to-brush surfaces a new "electric point brush" is said to make easier the refinishing of wicker furniture, radiators, and automobiles and the staining of shingles and plywood. The tool can be operated from 110-A.C. electric light sockets and can be used with water-and oil-based liquids.

PRODUCTS OF U.S.I.

Amyl Alcohol (Isoamyl Alcohol) Butanol (Normal-Butyl Alcohol) Fusel Oil-Refined Proponol (Normal-Propyl Alcohol)

Propanol (Normal-Propyl Alcohol)
Ethanol (Ethyl Alcohol)
Specially Denatured—all regular
and anhydrous formulas
Completely Denatured—all regular
and anhydrous formulas
Pure—190 proof U.S.P.,
Absolute—200 Proof
Salax "—proprietary salvent—
regular and anhydrous

ANTI-FREEZES
Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ANSOLS

ACETIC ESTERS -Commercial and High Test

utyl Acetate hyl Acetate—all grades ormal-Propyl Acetate **OXALIC ESTERS**

Dibutyl Oxalate Diethyl Oxalate PHTHALIC ESTERS Diamyl Phthalate Dibutyl Phthalate Diethyl Phthalate Disoactyl Phthalate

OTHER ESTERS Diatol* Diethyl Carbonate Ethyl Chloroforma

INTERMEDIATES Acetoacetanilide Acetoacet-ortho-chloroanilide Acetoacet-ortho-taluidide Acetoacet-para-chloroanilide Ethyl Acetoacetate Ethyl Benzoylacetate Ethyl Sodium Oxalacetate

ETHERS
Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S. ACETONE - A.C.S.

FEED PRODUCTS Choline Concentrates
Curbay B-G*
nL-Methionine
Riboflovin Concentrates
Special Liquid Curbay*
U.S.I. Animal Protein Factor
Supplement
Vacatone* 40

RESINS (Synthetic and Natural)
Arochem*—modified types
Arofene*—pure phenolics
Aroflat—for special flat finishes

Aroplaz"—alkyds and allied materials Congo Gums—raw, fused & esterified Ester Gums—all types Natural Resins—all standard grades INSECTICIDE MATERIALS

NSECTICIDE MATERIALS
CPR Concentrates: Liquid & Dust
Piperony! Butoxide
Piperony! Cyclonene
Pyrenone* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid & Dust
Rotenone Products: Liquid & Dust

INSECTIFUGE MATERIALS Triple-Mix Repellents

OTHER PRODUCTS

Cattodions Ethylene Nitrocellulose Solutions PiB*—Liquid Insulation Urethan, U.S.P. Special Chemicals and Solvents

*Rea. U.S. Pat. Off. CHEMICALS. NDUSTRIAL

60 EAST 42ND ST., NEW YORK 17, N. Y. (U.S.I.)



BRANCHES IN ALL PRINCIPAL CITIES

PRODUCTION CLINIC

By E. G. THOMSSEN, Ph.D.

HE reasons for spoilage of products during shelf life and methods and materials which may be used to correct and prevent the development of certain defects were considered in this space last month. Let us now consider more intimately the reactions of consumers toward defective goods, especially in connection with what is commonly termed "product liability." Production executives are distressed by a product imperfections developing on a dealer's shelf. When spoiled merchandise finds its way into the hands of the consumer, who carries his resentment beyond reasonable bounds, however, the annoyance becomes even more irksome.

In dealing with the personalities who make trouble on the product liability score, generally we find that they fall into one of three classes: the illusionist or ignorant, the grafter and the justifiable type. The first two are encountered the most frequently.

Damage through ignorance may be occasioned by the use of a product by persons who cannot or do not read directions or by children who are too small to comprehend how a product is applied or whose curiosity, appetite and urge to swallow preparations, carry them beyond reasonable bounds, sometimes with disastrous results. Since there are numerous cases on record where such individuals have misused a product, it is customary to include on labels warnings against making such products accessible to children particularly. Parents are solicitous of their children's welfare and in most cases heed such admonitions. It is especially desirable to warn against permitting children to touch items to their mouths, since it is surprising how they will eat or drink the most unappetizing things.

For the illiterate the best meth-

od of imparting plain directions is by illustration. This is particularly true if the use of a product is the



DR. THOMSSEN

least bit complicated. Exporters of products to countries which have a high percentage of illiteracy realize the importance of picturing the use of their preparations and are masters of this art. By using proper precautions, later headaches over settling liabilities in the courts or directly are simplified.

The grafting types of individuals are numerous and in the same category as pests, but as yet we do not possess any new painless toxic agent to eradicate them. Certain trade associations and product liability insurance companies, advise their members or clients to report the identity of the persons who seek to gain financial benefits through baiting manufacturers with threats of lawsuits because of some imagined and unnatural defect found in a product. These grafters offer to settle for a small sum and rather than quibble, the maker pays the claim.

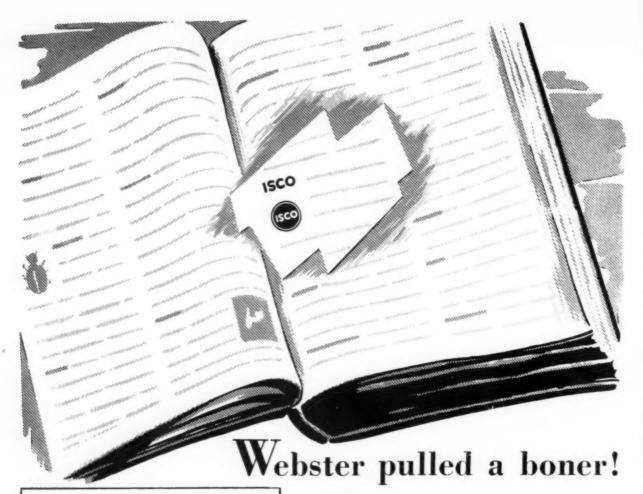
Frequent complaints by grafters concern the presence of glass in the product, said to have caused external or internal injury. The internal phase became so widely used, that cer-

tain specialists make their living by going into court and swallowing ground or broken glass to prove it is beneficial. Insects, dirt, sharp package edges, allergies, dermatitis and similar pretexts are concocted and held liable for injury or discomfort. Allergies are particularly troublesome. We well remember one legal department's argument against such cases. It pointed out that the eating of strawberries is responsible for many cases of allergy. Yet, because the hypersensitive experience discomfort from eating strawberries, the lawyers inquired should the farmer stop growing them?

While it is troublesome to combat the chiselers who seek to gain financial aid through sniping at reputable manufacturers' products, it is their duty not to pay unreasonable demands for damages. It is quite amazing at times to learn the deleterious effects which preparations can be conjectured to produce. Not only do these consist of injury to health of animals and humans, but they very frequently produce spoilage to clothing and household effects in the opinions of the dishonest. Since the claims are so distorted it is a simple matter to disprove them in the laboratory. The complainers will, in most cases, return a portion or all of the product if diplomatically requested to do so. A good plan is to lead them to believe the liability will be paid if sample substantiates the claim.

One case comes to mind. A woman claimed her curtains were ruined by application of a liquid, cleansing soap product. Upon the manufacturer's request for a sample, she returned a dilute sulfuric acid solution. The acid had been poured into the soap which decomposed, of course. When the manufacturer's representative called on the woman, it was ascertained that her husband worked at a filling station and she had learned that acid would eat away cotton. So, she poured it on the curtains herself because she wanted some new ones. This is but one of many similar cases.

There are justifiable cases for complaints against the deleterious effects of products offered for sale. In the past the abuse of the consumer's



SOME ISCO PRODUCTS

CAUSTIC POTASH Flake, Solid, Liquid

Regular Grades for all purposes

Special Quality, Liquid FC 45%—where low chlorides are a requirement.

CARBONATE OF POTASH Calcined, Hydrated or Liquid

TALC

.

WAXES Candelilla, Carnauba, Montan, Ozokerite, Beeswax, Ceresine

Paradichlorobenzene • Urthodichlorobenzene
Naphthalene

TRADE-MARK

CHICAGO

PHILADELPHIA

WHEN Noah Webster was compiling his dictionary in the early 19th century, he forgot to approach the thriving, young firm of Innis, Speiden for a definition of the word "ISCOoperation". ISCOoperation means, of course, that Innis. Speiden & Co., with all its "operating" plants and branch offices, is ready to "cooperate" with you in solving production and supply problems.

But better than a definition . . . have an ISCO representative give you a working demonstration of ISCOoperation! You'll find he is a young "old-timer" with an average of 15 years practical experience in the chemical field. He'll be frank to admit it if he cannot solve your problem on the spot, but will gladly call on the technical know-how of the ISCO laboratories in Jersey City and Niagara Falls.

Webster pulled a boner, but you need not miss the benefits of ISCOoperation!



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credulity because of the unscrupulous cupidity of certain manufactuerrs gave lawmakers ample reason to pass legislation to regulate such items as insecticides, germicides, cosmetics and caustic poisons. State and Federal legislation has helped to reduce such abuses and has tended to raise the standard; of these products and, in general, has been satisfactory. Trade associations, instead of fighting such laws, unless they are unduly onerous or duplicate others, work to make them agreeable to both industry and government. In some cases, these associations augment the legislative bodies' work and set up standards for products in their field not regulated by law.

In spite of all the laws and regulations on the statute books, inevitably some company issues defective goods either intentionally to evade the law or through manufacturing errors. When goods of this kind find wide distribution, they harm not only the individual company but the industry as a whole. The early DDT products which were put out right after the end of the war are an example. Consumer dissatisfaction with defective products can not only result in an epidemic of claims against offending companies, but also makes it more difficult for legitimate manufacturers to do business in the same fields.

Product liability cases involve men in production departments directly. They are compelled to provide the excuses in the liability cases and to give reasons for product defects. Product liability cases are further complicated by ignorance, dishonesty, avariciousness or unreasonableness. The wisest course to follow is to try to anticipate what will happen when a product is in use and be ever alert to the prevention of errors in manufacture. It is also advisable to have top-flight legal counsel.

Tank Meters

RECENTLY we saw an inexpensive method of gauging the liquid contents of a large battery of closed, round, horizontal tanks. Instead of resorting to the oft-used method of glass gauges or floats and pulleys, this engineer used the common type tank

meter one finds on the fuel oil tanks used domestically. These are readily installed and give fairly accurate readings, especially on storage tanks.

Change Maker

TIME is lost frequently in plants which have vending machines for candy, cokes, etc. Brooke Corporation, Chicago, makes a simple, inexpensive device which changes quarters into nickels or dimes. The maker claims that in certain plants its installation has saved eight and one-quarter man hours per week. Further details are available upon request.

Specialized Pumps

BYRON JACKSON COMPANY of Los Angeles, prides itself on solving problems involving pumps and pumping. One of their B J pump installations has been lifting 75 g.p.m. of water at 3200 feet for over 18 years in Grand Canyon Park. The firm is in a position to aid with any unusual pumping problem on written request.

Special Chemicals Catalog

DOW CHEMICAL COMPANY, Midland, Mich. is offering a complimentary copy of their catalog on "Special Chemicals" to interested manufacturers. This work describes two hundred chemicals developed by Dow which give promise of further

New, low-cost semi-automatic vacuum liquid filling machine announced recently by Packer Machinery Corp., New York. "Model A" is a semi-automatic, straight line filler. It fills from a liquid source, such as drum, bottle or demijohn, resting on floor. Overflow is handled by bottle attached to outlet hoses.



commercial development. Experimental quantities are available, and the firm invites correspondence on them.

Shipping Bags

TOUGH, puncture - resistant, waterproof textile bag is being featured by Bemis Bro. Bag Company, St. Louis. These bags are made resistant to acid, grease, oil and moisture. They are economically priced and claimed to be the strongest shipping bags made.

Water Hardness Test

Total water hardness, and hardness caused by calcium alone may be measured by direct titration methods, according to a recent announcement by Hall Laboratories, Inc., Pittsburgh. Hardness due to magnesium is checked by difference in calcium and total hardness determinations.

Testing procedure is as follows: A clear sample of the water to be tested for total hardness is measured into a porcelain dish. A small amount of buffer solution is stirred in to bring the sample to a suitable pH value. The indicating solution then is added, and stirred. The sample at this point sohws a red color. The final step is the addition of the titrating solution, which turns the color to blue. Disappearance of the last trace of red marks the end point. Procedure for hardness due to calcium alone is identical, but with a different buffer solution and indicator, and with final color after titration a violet blue.

New Leitz Colorimeter

The new Industrial Rouy-Photrometer for use in colo:imetric analysis has been announced recently by E. Leitz, Inc., New York. The unit is a single cell, line-operated instrument. On special order, it is adaptable to 6-volt D. C. operation. It is equipped with four absorption cells, one sealed water absorption cell, and plastic insert.

One of the features of the instrument is a selectivity over the entire visible range of the spectrum. The unit is equipped with a set of ten compound glass filters mounted in a ro-

EXQUISITE FLORALS FOR SOAPS

Apple Blossom Honeysuckle Rose
Carnation Hyacinth Sweet Pea
Clover Jasmin Syringa
Fougere Lavender Verbena

Fougere Lavender Verbena
Gardenia Lilac Violet
Geranium Lily of the Valley Wisteria

Samples and quotations upon request-

Compagnie Parento, Inc.

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BUILT SOAPS

For Every Purpose

For High Temperature or Low Temperature Use Strongly Alkaline or Mildly Alkaline

- FOR LAUNDERING
 - Commercial—Institutional—Launderette
- FOR TEXTILE PROCESSING
- FOR HAND DISHWASHING

Write us about your requirements. Our standard products may fit your need exactly—or we can build to your desired formulas. We also have a full line of pure soaps.

National Milling & Chemical Company

Industrial Soap Products Since 1896

tating plastic disk within the photrometer. The filters and filter element are controlled to produce identical transmission curves.

New Multiple Filler

A new, multiple unit "Whiz-Packer" filling machine for packaging more than one dry product to definite levels in single packages was announced recently by Frazier & Son, Belleville, N. J. The unit is also useful for filling more than one dry product in a container when the products cannot be pre-mixed. Weights are individually controlled permitting different weights to be filled at each filling head.

Unscrambler Device

The problem of unscrambling type F spout cans and paneled flasks so that spouts or panels face in the correct direction for filling and labeling has been solved through the development of an overhead, adjustable, steel guard rail type guide, announced recently by Island Equipment Corp., Long Island City, N. Y. The guide enables containers to approach the discharge V-belts so that they are discharged in single file with spout or panel facing in the correct direction.

Stainless Equipment Booklet

Its line of stainless steel equipment for use in the chemical field is illustrated and described in a booklet issued recently by Chicago Stainless Steel Equipment Corp. Typical illustrations include cookers and mixers, steam jacketed kettles, storage tanks, reaction kettles and agitators.

Mathieson Process Booklet

A 28-page illustrated booklet explaining the Mathieson mercury cell process for the manufacture of chlorine, caustic soda and caustic potash, was announced recently by the Chemical Plants Division of Blaw-Knox Co., Pittsburgh. The booklet is issued as Bulletin No. 2261 and describes the process developed by Mathieson Chemical Corp., Baltimore. It features the economical production of chlorine and caustic of a high degree of purity. The Blaw-Knox division has been authorized to construct plants using the

Mathieson stationary mercury cell technique.

Lecithin in Soap Data

A bulletin discussing the use of soybean lecithin in soaps and detergents as a superfattening agent was issued recently by American Lecithin Co., Woodside, L. I., N. Y. Some of the properties of soybean lecithin are described, and a list of references on the use of the material in soaps, detergents and cosmetics is included.

New Calgon Booklet

Calgon, Inc., Pittsburgh, recently announced the publication of a new booklet entitled, "Five Aids to Easier Cleaning in the Milk Plant." Types of milk plant soil and the interaction of milk, water and cleansing agents are covered. The use of the company's products for various cleaning operations is also mentioned.

New Motor Style

The availability of their "Klosd-Tite Fan Cooled" motor with face mounted end bracket having NEMA style "c" dimensions, in ratings of ½4 h.p. to 20 h.p. inclusive, was announced recently by Sterling Electric Motors, Inc., Los Angeles. Obtainable in either the footless type or standard horizontal type with feet, these face mounted motors are recommended for close coupled pumps or blowers, or for building into and becoming integral parts of machines.

Sterox 5 and 6 Data

Two nonionic type surface active agents designed principally for industrial use are described in detail in a new bulletin available from Monsanto Chemical Co., St. Louis, it was announced recently. Covered are "Sterox No. 5" and "No. 6." Both are compatible with anionic and cationic type detergents and effective in hard water or in the presence of metallic salts. The five page bulletin includes data on chemical and physical properties, solubility and surface tension. Suggested applications in metal and textile cleaning operations are given.

New Potdevin Labelers

A new semi-automatic feed label paster was announced recently by Potdevin Machine Co., Brooklyn. The new device is $7\frac{3}{4}$ inches wide by $11\frac{1}{8}$ inches long. It is equipped with a 1/20 h.p. motor, and can be furnished as an attachment to machines already in use. The amount of adhesive applied to the label is controlled by a dial regulator.

A new line of coating and gluing machines for overall coating of glue, lacquer, varnish, resins, latex and other liquid solutions was announced earlier by Potdevin. The new line, referred to as the 2R series, features a slow speed tank roller, which is designed to offset the effects of foaming if the solution is agitated.

New Shell Solvent Book

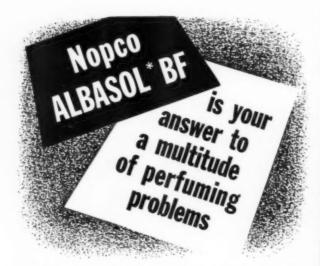
"Hexylene Glycol," a new booklet was announced recently by Shell Chemical Corp., New York. The booklet describes the solvent power, coupling ability and other general properties of hexylene glycol, a petroleum derived organic chemical. Commercial applications are discussed with emphasis on cleaning compounds, wood preservatives, pre-spotting soaps, etc. Copies available on letterhead request.

New "Pulva-Sizer"

Announcement of the new Model B "Pulva-Sizer" for grinding and blending of soaps, cosmetics, etc., was announced recently by Pulva Corp., 550 High St., Perth Amboy, N. J. Controlling particle size distribution for making a uniform, fine granulation recommends the machine for milling soap powders, according to the maker.

New Ermold Unpacker

A new production model of the Ermold Automatic Unpacker, which automatically removes standard containers from cartons, deep or shallow cases and trays, was announced recently by Edward Ermold Co., New York. The new machine empties filled or partially filled cases, discharges containers onto a continuous conveyor, and releases empty cases to a conveyor on either left or right side of the machine.



Here is a quality carrier for essential oils and perfumes that gives you an extremely simple means of incorporating perfume into a wide variety of products such as bath oils, shampoos, creams, hand lotions, theatre and washroom sprays, and odormasking compounds. Made to rigid specifications, you will always find it completely uniform—a pale amber, clear liquid containing no volatile organic matter.

SIMPLE TO COMPOUND

In the preparation of Bath Oils and Cosmetics, Albasol BF is readily mixed with essential oil, by means of slight agitation, and the resultant blend is added to the bath oil or cosmetic in the quantity necessary to produce the intensity of fragrance desired.

In the preparation of sprays, Albasol BF is easily blended with perfume, by agitation, and the resultant mixture is diluted with water to suit individual requirements.

NO HEAT OR SPECIAL EQUIPMENT IS NECESSARY

And you'll find Albasol BF furnishes properties that enhance the quality of products importantly. For example:

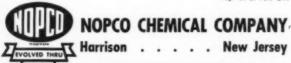
The outstanding stability of Albasol BF against oxidation and development of odors that tend to neutralize perfumes, helps to lengthen the useful life of products.

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STRAIGHT-LINE VACUUM FILLER

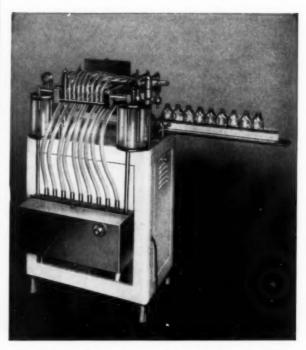


Photo of Rear view of the New Model B-49 Straight-Line Vacuum Filler showing set-up utilizing nine tubes for handling six-ounce containers.

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PRODUCTS AND PROCESSES

Creamy Inorganic Detergent

This type product may be prepared by adding 200 kilograms of two per cent aqueous NaOH to 100 kilograms of bentonite, mixing, and heating the whole at 60° to 100° for 30 minutes. Forty kilograms of sodium silicate and 20 kilograms of water are added, and the mixture cooled. Ten kilograms of aqueous KSCN (20 per cent solution) are added to the cool product. Japan Pat. 174,118, through Chem. Abs.

Detergent Tablets

A hand cleaner which may be substituted for toilet soap in times of shortages is formed by combining a semi-solid detergent cellulose ether jelly with such fillers as precipitated chalk, and forming into tablets. A suitable composition has 12 parts of commercial sodium carboxymethylcellulose worked into a solution containing 15 parts of a polyethylene oxide-alkyl phenol condensation product and 30 parts water until the mixture has been converted into an apparently homogeneous jelly; 43 parts of precipitated chalk are then worked in. Soap Perf. & Cos. 22, No. 12, 1333

Hair Dye and Shampoo

A hair dye and shampoo is prepared by mixing 400 grams of "Lamepon 4C" (a foaming detergent consisting of a protein-fatty acid condensate), 590 grams distilled water, and ten grams of a hair dye. Hexametaphosphate and perfume may also be included. Swiss Pat. 240,909, through Chem. Abs.

Detergent Emulsifiers

Steam emulsion tests (ASTM) on potassium stearate, laurate, palmitate, myristate, oleate and sodium laurate indicated that the emulsifying power was about the same for all the soaps tested at concentrations above

two per cent, but that the laurates and myristate lost their emulsifying power below .5 per cent, while the other detergents lost only half their emulsifying power. A comparison of one per cent solutions of synthetic detergents and soaps indicated that the synthetic products yielded higher emulsifying power values. The synthetics tested included: "Cyclanon O," "Melioran," "Oxyethylomide," "Igepon T," "Igepal C," and "Nacconal NR." Tests with "Nekal BX" indicated that this agent lost its emulsifying power at one per cent concentrations. Teintex 14, 361-9 (1949), through Chem.

Detergent Jelly

The value of glycerine in formulating alginate preparations is illustrated in the following method for making a detergent jelly:

	parts
Calcium alginate	2.00
Sodium citrate	1.00
Technical triethanolamine	
lauryl sulfate	10.00
Glycerine	5.00
Methyl p-hydroxybenzoate	
Perfume and coloringsuf	ficient
Water, to make	100.00

Mix the ingredients, brisk stirring being continued until the mass begins to thicken, when the preparation should be packed immediately. Am. Perf. & Esent. Oil Review, 55, No. 1, 35 (1950).

Stearamide Detergent

A new amide derivative useful as a washing agent for textiles is prepared by treating technical stearamide, one mole, with crotonaldehyde, one mole, and NaHSO₃, two moles in a solvent and in the presence of a secondary amine. A mixture of technical stearamide 5:6 and formylmorpholine 15 parts is stirred and heated at 110-120° until a clear solution is obtained. The mixture is cooled to 90-5° and treated first with crotonaldehyde 1:7 and then with finely powdered and

dried NaHSO₃, five parts. The temperature is raised to 130-40° for four hours, and the mixture is allowed to cool somewhat and is then treated with 50 parts EtOH. After short heating and cooling, the product is filtered and recrystallized from 80 per cent EtOH. Swiss Pat. 246,668, through Chem. Abs.

Germicide Solution

A germicide or disinfectant mixture having a synergistic action may be prepared by combining three parts by weight of an acid salt of an alkyl amine containing at least one alkyl radical having from eight to 18 carbon atoms with one to nine parts of mercuric chloride. U. S. Pat. 2,-489,965.

SAA in Paint Cleaners

Good paintwork cleaners are formed with synthetic detergents. The possibilities of "Teepol" and "Santomerse," for liquid and powdered products respectively, are to be noted in particular. The powdered synthetics may be extended with sodium carbonate and sodium sulfate, while the liquid preparations may be used with methyl cellulose. Typical formulas are as follows:

I		
sodium alkyl sulfate	8	parts
sodium carbonate		
sodium sulfate		parts
trisodium phosphate	10	parts
II		
liquid synthetic detergent sodium carboxymethyl	10	parts
cellulose	2	parts
preservative		q.s.
water to make	100	

C. V. Cardew. Soap Perfumery and Cosmetics 23, No. 2, 153-156 (1950).

Clear Type Shampoo

A clear type shampoo with good body and appearance may be formed from 35 parts of fatty alcohol sulfate (Duponol WA, WAT or SN may be used); 2.5 parts of sodium alginate and 62.5 parts of water. The sodium alginate is added to the fatty alcohol sulfate with warming to 50° C., and then the water is added. J. A. Shanks and E. Valentine. Soap Perfumery and Cosmetics 23, No. 2, 169 (1950).

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SOAP PLANT OBSERVER

By John W. McCutcheon

ATER cooling requirements for glycerine recovery and the value of a cooling tower for the recirculation of the water were mentioned here last month. Such a system is a practical necessity in most plants of any size unless they are located directly beside a river or other body of water. Besides being economical to operate, recirculation may also be used as a check against losses.

The first step in preparing such a system is to determine the normal water usage for each operation. For an evaporator having a rated capacity of 4000 pounds an hour, the cooling water necessary on the condensers will be about \$60 gallons per minute when the water temperature is 75°F. or about 925 gallons per minute if the water temperature is 85°F. As the evaporation proceeds and the glycerine becomes more concentrated, the addition of feed water slows up, the evaporation rate decreases and the cooling water requirements fall off. On a single effect evaporator handling 40,000 pounds of 10 per cent glycerine lye in 12 hours, only 200 gallons per minute or less cooling water at 75°F. is required toward the end of the run.

In addition to the water required to condense the 36,000 pounds of water evaporated from the 40,000 pounds of lye in the above example, water is also required to condense the few hundred pounds of steam per hour used in the ejectors. This is a small amount. Each plant must be calculated to its own system of operation. Thus, double and triple effect evaporators will differ from single effect, etc. For glycerine distillation, the cooling water requirements are very much smaller and depend on the amount of water in the crude, the water admitted as steam

to the still body and the steam requirements to maintain the vacuum. For 500 pounds per hour refined capacity, water requirements at 75°F. would be about 100 gallons per min-



ute. At 85°F, about 150 gallons per minute are needed.

Once the total cooling water capacity has been set up at any one temperature, it is then necessary to calculate the capacity required under the most adverse weather conditions. For example, let us suppose we have two single effect evaporators having a capacity of 4000 pounds per hour and handling 40,000 pounds of 10 per cent glycerine lye in 12 hours; plus a still handling the above production. The calculated total capacity required would be 1,200 gallons per minute at 75°F. to 2,000 gallons per minute at 85°F.

Where summer temperatures do not permit cooling water as low as 85 °F., additional capacity is required. This necessitates a study of local weather charts over a period of years, and a compromise between an unreasonable capacity or a few days shut down. The staggered operation of the evaporators is also a help and can be

used to advantage in the warm weather.

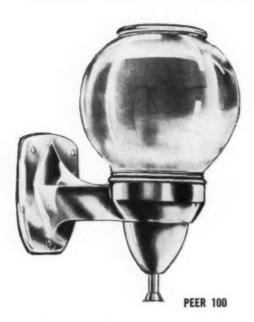
When cooling water goes much over 90°F., vacuum equipment begins to be affected seriously. In one plant with which the writer is familiar, the p:emium on water was so high, both from a cost and disposal point of view, that the normal overflow in the system due to the condensation, was redirected back to previous operations, such as fat splitting. In this way the water system became almost self contained.

ALL oil as a raw material for use in detergents has made vast strides in the past ten years. Although it still represents only about eight-tenths of one per cent of the total raw materials consumed in the soap kettle, according to the Bureau of Census reports, it is probable (recently issued bulletin of the Tall Oil Association, New York, indicates) that twice that amount is actually consumed if the oil used in textile oils, cutting oils, flotation reagents, etc., is also included. This brings the annual consumption figure to nearly 30 million pounds.

Refined tall oil use in soaps is on the increase. In 1947, about two pounds of crude tall oil were used for every pound of refined. The latest data available indicate that this position is now reversed. It is the writer's feeling that tall oil will find its greatest advantage in the synthetic detergent field, particularly in the preparation of synthetics of the nonionic type, of which a number of important products are already on the market. Some of these are finding use in such a competitive soap market as commercial laundries.

THE Oxo process has been mentioned from time to time in the chemical literature — particularly the development in Germany during World War II. Since then, several American companies have gone ahead with the development. One firm, Rohm & Haas Co., Philadelphia, is in pilot plant operation on an extensive series of chemicals. The most important one, as far as soaps and detergents is concerned, is octadecyl alcohol D-2, which is a

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Its sodium sulfonate has a surface tension on a 0.1 per cent concentration of 28.8 dynes/cm which indicates excellent wetting properties. Probable price on plant scale production would be 75c, thus making the raw material price of the pure sodium sulfonate derivative about 55c per pound. The main interest in this product stems from the adaptation to American production of a new synthetic tool which may prove of revolutionary importance to the synthetic industry. The process which originated in America about 1930 condenses an olefine with CO + H., to lengthen the chain one carbon:

$$-C = C - + CO + H_2 \rightarrow$$

$$-CH - CH - CHO$$

Octadecyl alcohol above is made from the condensation of two moles of 3, 5, 5-trimethylhexaldehyde using 2, 4, 4-trimethylpentene as the original olefine. For details see "Chemicals from the Oxo Process" a bulletin by Rohm & Haas Company, Philadelphia 5, Pa.

Booklet on Glycerine

A booklet, "Why Glycerine for Drugs and Cosmetics?" was issued recently by the Glycerine Producers' Association, New York. The booklet presents basic technical data of interest to the chemist, as well as facts about the use of glycerine for the non-technical buyer. The 20-page work discusses the four major properties of the material, and in text, tables and charts gives information as to its physical and chemical properties, origin and usage.

Hydropulse Homogenizer

A new homogenizer featuring a suction lift has been announced by the C. W. Logeman Co., Brooklyn,

N. Y. The hydropulse Homogenizer primes itself when dry, forcing out all air automatically. Its floating piston eliminates such parts as crank shaft, connecting rods, and cross head guides. A higher efficiency is claim-

ed for the unit since it eliminates rod and piston packing resistance. The homogenizer has a capacity of 50 gallons per hour.

New Valve Selection Chart

A new reducing valve selection chart is available from Kliptel Valves, Inc., Hamilton, Ohio. The chart permits selection of the correct valve by referring to the service for which the valve is intended, checking reduced pressure limits and other factors.

New Detergents Book

Fundamentals of Detergency by William W. Niven, Jr. Published by Reinhold Publishing Corp., New York. 256 pages, 6 x 9 inches, cloth binding, price \$5.50.

The text is divided into two parts dealing with the fundamental and practical considerations of the detergent process. The first part of nine chapters constitutes four-fifths of the book, and deals with the theoretical aspects of detergency.

This section includes: the definitions of detergents and detergency; the nature and properties of detergents and builders; and the chemistry and surface activity of built and unbuilt detergent solutions. The preparation of soap is described briefly, as is the preparation of the different types of synthetic detergents. Surface tension, interfacial tension, interfaces, wetting, foaming, emulsification, and solubilization in relation to detergency are discussed fully.

The second section discusses the nature of soils, fibers, mechanics of soiling, separation of soil from the fabric, and dispersion of soil in the detergent solution. The overall detergent action in laundering is summarized in one of the later chapters, discussing the components of the detergent system and their functions. The appendix includes the theoretical essay of A. B. D. Cassie and R. C. Palmer on the effect of electrolytes on surface activity. The text is well illustrated with graphical and tabular data, as well as sketches to clarify the material under discussion.

P&G Employment Booklet

A booklet on its guaranteed annual employment plan was issued recently by Procter & Gamble Co., Cincinnati, under the title, "More Than a Quarter Century of Guaranteed Annual Employment." The booklet, written in question and answer form, attempts to explain the operation of the scheme at Procter & Gamble Co.

Mathieson Caustic Book

"Mathieson Caustic Soda," a new 48-page book, is now available to caustic users throughout the industry. Fully illustrated and printed in two colors, it covers every phase connected with the manufacture, economics, properties, handling and application of this product. Requests for the book should be addressed to Mathieson Chemical Corp., Mathieson Building, Baltimore 3, Md.

With Ungerer 25 Years

Joseph Oestel completed twenty-five years continuous service with Ungerer & Co., New York, on March 2. K. G. Voorhees, president, presented Mr. Oestel with a suitably engraved gold wrist watch commemorating this occasion.

Mr. Oestel was in charge of Ungerer's warehouse at Twentieth Street, since its opening in 1925. He is now in charge of Ungerer's New York shipping and filling department.

Flatow to Brazil Oiticica

Robert E. Flatow, formerly assistant vice-president of Hardesty Chemical Co., New York, was recently named assistant sales manager of Brazil Oiticica, Inc., New York.

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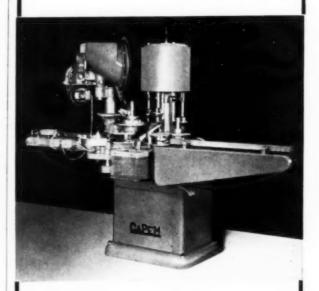
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PATENTS

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The data listed below is only a brief review of recently issued pertinent patents obtained by various U.S. Patent Office registered attorneys for manufacturers and/or inventors. Complete copies may be obtained direct from Lancaster, Allwine & Rommel by sending 50c for each copy desired. They will be pleased to give you free preliminary patent advice.

No. 2,490,202, Insecticidal Composition Comprising a Polychloro Branched-Chain Hydrocarbon, patented by George Allen Buntin, Wilmington, Del., assignor to Hercules Powder Company, Wilmington, Del., a corporation of Delaware. An insecticidal

composition is covered comprising a polychloro-breached-chain hydrocarbon and a diluent, the polychloro compound containing from about 60% to about 80% of chlorine and being a chloro derivative of a branched-chain hydrocarbon in which at least one alkyl radical is attached to a straight chain of from 4 to 6 carbon atoms, the total number of carbon atoms in the molecule being equal to from 6

No. 2,492,940, Manufacture of Soap from Sperm Oil, patented by German Schmidt and Carlos Edwards, Valparaiso, Chile, assignors to Compania Industrial, Valparaiso, Chile, a corporation of Chile. A continuous method of making soap from sperm oil having a high fatty alcohol content, is described which consists in reacting predetermined quantities of preheated sperm oil and melted anhydrous alkali in the measured stoichiometric proportions for the alkli to saponify the fatty acids and to completely transform the fatty alcohols of said sperm oil into soap, in a reaction

chamber, initially supplying heat to cause transformation of the fatty alcohols of the sperm oil into soap, in a reaction chamber, initially supplying heat to cause transformation of the fatty alcohols of the sperm oil into soap, thereafter charging to the chamber additional quantities of preheated sperm oil and melted anhy-drous alkali in the same stoichiometric proportions aforementioned, discontinuing the supply of heat to the chamber, and thereafter relying wholly upon the heat set free by the exothermic soap producing reaction between the fatty acids and the additionally charged sperm oil and alkali to furnish the necessary heat required by the endothermic reaction of the fatty alcohols of the additionally charged sperm oil and the alkali to completely transform said fatty alcohols into soap.

No. 2,494,891, Process and Apparatus for Making Floating Soap, patented by Donald E. Marshall, Summit, N. J., assignor to Colgate-Palmolive-Peet Company, a corporation of Delaware. Covered is a piece of apparatus for homogenizing, compacting and extruding a material such as soap, the combination which comprises a plodder having a barrel and a worm operating in the barrel for compacting and feeding forward a material sup-

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DETERGENT 240	May be used alone or control household and industrial detergents.		

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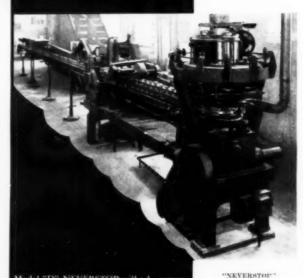
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plied to the plodder, a comminuting head located at the end of the worm for spreading the material being fed forward by the worm, a drive for said comminuting head, a foraminous plate located behind the comminuting head and upon which the material is spread and then forced through by said comminuting head, means located at the comminuting head for injecting a compatible gas into the material as said material is spread on and forced through the foraminous plate whereby particles of the gas are incorporated in and uniformly distributed throughout the material. A process for aerating milled soap is also described comprising the steps of continuously compacting unheated milled soap chips and progressively feeding said compacted soap chips forward, shredding and aerating the soap by forcing the compacted soap through openings in a foraminous plate extending across the direction of flow of said soap and forcing particles of gas with the soap through said openings whereby the particles of gas are enveloped by said soap to form aerated shreds of said soap, maintaining gas pressure on the gas containing soap shreds leaving said plate to retain occluded gas, and then mechanically compacting said shreds into bars of aerated milled soap which float, said process being carried out while maintaining the soap in solidified condition.

No. 2,485,744, Treatment of Tall Oil and Portions Thereof, patented Oct. 25, 1949 by Samuel Koonce and Edmond S. Perry, Rochester, N. Y., assignors to Distillation Products, Inc., Rochester, N. Y., a corporation of Delaware. The patent describes the process which comprises in combination esterifying the fatty acids of tall oil with a monohydroxy aliphatic alcohol without substantially esterifying the rosin acids of said oil, dissolving the mixture of esterified fatty acids and unesterified rosin acids in a solvent therefor, removing rosin acids by contacting said mixture with an adsorbent effective to adsorb substantially all of the unesterified rosin acids from said mixture without substantially adsorbing esterified fatty acids there-from, and thereafter washing said adsorbent with a strong eluting solvent effective to remove adsorbed rosin acids therefrom.

No. 2,495,071, Production of Glycerin and Distilled Fatty Acids, patented by Victor Mills, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio. The patent describes the processing of glyceride fats to produce distilled fatty acids and an aqueous solution of glycerin, wherein water and fat are subjected to countercurrent hydrolysis at effectively high temperature and high pressure in the

presence of a water-insoluble metal soap catalyst, and wherein dissolved water is removed from the resulting hot fatty acids by vaporization, the steps which comprise subjecting the resulting dried and hot fatty acids containing said metal soap catalyst promptly and without intermediate cooling to vacuum distillation with the aid of further heat, collecting a relatively concentrated undistilled relatively residue, amounting to but a minor fraction of the net amount of the feed to the still, and returning a substantial proportion of said residue, to-gether with the metal soap catalyst contained therein, to the stream of fat entering the hydrolysis reaction.

No. 2,489,307, Polishing Material, patented by John B. Miller, Lewiston, N. Y., assignor, by mesne assignments, to National Lead Company, New York, N. Y., a corporation of New Jersey. The process of preparing a finely divided zirconium oxide polishing agent is covered which consists in calcining oxidized zirconium cyano-nitride at about 1300° C., dry milling the calcined product to less than 44 microns size, mixing the resulting product with caustic alkali predetermined in amount to yield about 1% of alkali oxide in the mixture, recalcining said mixture at about 1050° C., wet grinding the resulting product and classifying to a size desired for polishing purposes.

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Glycerine Outlook

(From Page 44)

American producers have their own plants, accounted for most of the tonnage. Exports to Germany practically balanced foreign imports in the first half of 1949. However, the appearance of accumulated stocks on the market in the fourth quarter of 1949 resulted in heavy imports, so that stocks at the outset of 1950 totaled 48,551 million pounds, which is comparable to the stock status at the outset of 1949. By the end of 1949, accumulated stocks of foreign glycerine had been exhausted, however, so imports in 1950 will depend on current foreign production. The demand for glycerine is expected to continue strong, and supplies may be expected to continue somewhat tight, since European recovery tends toward increased glycerine consumption, thus reducing supplies that might be available for export.

Transparent Soaps

(From Page 42)

oil, tallow and castor oil. These oils and fats should be low in free fatty acids and of good color. Coconut oil, it is said (14), serves to impart ready solubility to transparent soap, while tallow provides firmness.

Castor oil finds extensive use in the formulation of transparent soap. When used as a raw material in such products, it gives a soap of high transparency but one which, unfortunately, is quite soft. In addition, it is liable to develop rancidity in a short time unless saponification is carried to completion—a rather difficult procedure at the low temperatures often used to make transparent soaps. For these reasons, this oil is best used in combination with coconut oil, tallow or the like. (6, 13)

Rosin is another useful addition to the fat charge when formulating transparent soaps. Rosin additions have the advantage of low cost and impart good lathering properties to the soap. In addition, the presence of rosin provides an aromatic odor and tends to combat rancidity. The rosin must be of good quality, however, and

must be used in reasonable amounts, otherwise it may cause the soap to darken with age and make it soft and sticky (8).

According to Fisher (6), stearic acid gives body to a transparent soap, especially one containing considerable filler. As a matter of fact, says he, it is possible to make a transparent soap from equal parts of stearic acid and rosin, with the equivalent of caustic soda. The resulting soap is treated with alcohol.

This authority also notes that some transparent soaps contain as much as 40 per cent of fillers. Among such materials, he mentions the use of sodium carbonate, potassium carbonate and sodium silicate.

Although some grades of transparent soap do not require any added color, it is common practice to include agents which will impart a desirable tint to the product. Red and yellow are the preferred colors. Dyestuffs should be carefully selected and only alkali-resistant colors should be uesd. Due attention should be given also to the selection of the perfume because many compounds are capable of causing spotting trouble.

It has been said (6) that transparent soap stands alone in its adaptability to production in either small scale or large factory quantities. Formerly, and to some extent even today, transparent soaps were made by the old "alcohol" method. This consisted essentially of dissolving the soap in alcohol, allowing impurities to settle out, and evaporating the alcohol.

Old Alcohol Process Given

ess have been given by Martin (14). However, a more modern version has been presented by Hurst (7). In this method a good ordinary soap, prepared from tallow or other oils, is dried and shaved. It is then put into a kettle with sufficient alcohol to bring it into solution. The kettle may be heated, but the temperature should not be too high; from 130 to 160°F. being sufficient. The process of dissolving the soap is best effected in a still fitted with a condenser, so that the alcohol volatized during this oper-

ation can be recovered and used for another batch.

When the soap is completely dissolved, the solution is allowed to stand to permit any insoluble matter to settle out. The clear portion is then transferred to a still where about three-quarters of the alcohol is distilled off and condensed for further use. The residual soap is transferred to frames, is scented and colored if necessary, and cut up into tablets, which are kept in a warm atmosphere to set and to permit the evaporation of the remaining traces of alcohol and excess of moisture. When properly prepared and suitably stored, the somewhat turbid soap will gradually become transparent. It has been pointed out (17) that a soap which has been made correctly by the old alcohol process will darken and take on a rich amber tint after long storage and exposure to air.

Cleanliness Important

A SIDE from the use of high grade materials there are a number of other factors which should be taken into consideration in the modern manufacture of transparent soaps. For example, experts (8) in the field have stressed the importance of cleanliness and freedom from rust in the crutcher or kettle in which the soap is made. They feel that glass enameled vessels, or those made of stainless steel or nickel alloy steels are preferable.

These workers also advise that, in working up transparent soap, the slabber and cutting table wire should be set so as to keep scrap at a minimum. Fisher (6), however, notes that cutting with wire causes the soap to take on a rough transular appearance. This, he suggests, can be avoided by the use of a band knife with a sharp edge. He also points out that if the soap is dried slowly, it remains tough and pliable and lends itself readily to molding. If it is dried too rapidly or excessively, the soap will be brittle and will develop cracks if stamped into round or oval cakes. Also worth noting is the observation by Vallance (18) that the transparency of the products may be further enhanced by gently polishing the pressed cakes with

(Turn to Page 145)

SANDARY PRODUCTS

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Kranich standard soaps are manufactured and produced entirely in our own factory. All soaps are manufactured from fatty acids distilled and vegetable oils refined by us. All alkalies are dissolved and settled to remove impurities. All soaps are HEAVY METAL free (new technique).

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Industry's chemists and entomologists are continuing their tests of this new insecticide material. Large-scale production quantities probably will not be available until 1951.

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*Coined name suggested for allyl homolog of Cinerin 1 by Interdepartment Committee on Pest Control Materials.



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- **5. CORRECT VAPOR PRESSURE...** "Genetron" dispersants are designed to meet any vapor pressure requirement for insecticidal, fungicidal, germicidal, deodorant, etc. use. Ultimate in aerosol performance is assured at any vapor pressure up to 40 pounds p.s.i.g. at 70° F.
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Shelfline containers can be made in Emerald Green, Flint or Amber and in a range of 12 capacities requiring only 4 cap sizes.

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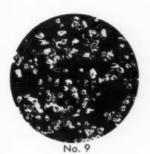
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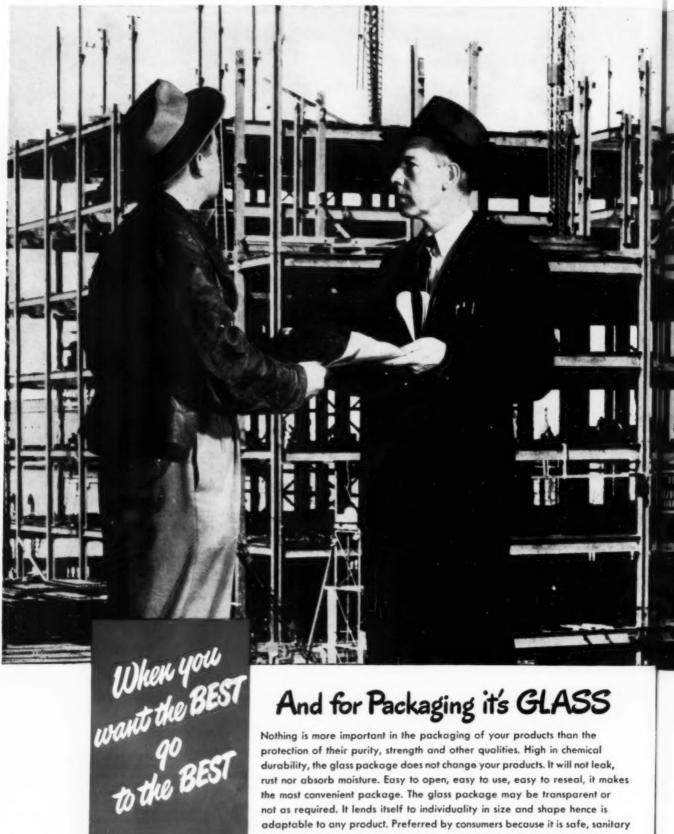
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And for Packaging it's GLASS

Nothing is more important in the packaging of your products than the protection of their purity, strength and other qualities. High in chemical durability, the glass package does not change your products. It will not leak, rust nor absorb moisture. Easy to open, easy to use, easy to reseal, it makes the most convenient package. The glass package may be transparent or not as required. It lends itself to individuality in size and shape hence is adaptable to any product. Preferred by consumers because it is safe, sanitary and convenient . . . by retailers because of its sales and merchandising advantages. Anchor Hocking Glass Corporation, Lancaster, Ohio.



Anchorglass

OVALS

For frequently used household products like oils and liquid detergents, attractive Anchorglass Ovals appeal to housewives, That's because these ovals are easy to hold, easy to open—to pour from to reseal and store. You'll like Anchorglass Ovals for their outstanding production line performance. Uniform in all dimensions, smooth sides prevent twisting and jamming—flat bottoms prevent tipping. They're tough and strong because glass is evenly distributed. Proper annealing and constant tests and inspections keep them right. Anchorglass Ovals are available in crystal, green or amber glass, in 9 capacities from 1 to 32 ounces.

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NOW KINETIC AEROSOL

New Survey Answers

What Consumers Think of Aerosols . . .

WHO BUYS AEROSOLS? To find the answer, Kinetic Chemicals, Inc., manufacturers of "Freon" safe propellents, engaged the services of a recognized business research organization. Over 2300 householders in every section of the country were asked if they had ever heard of aerosols. 89.3% said "Yes"; 10.7% said "No." Of those replying affirmatively 42.4% had bought one or more types, while 57.6% admitted that they had bought none. Further analysis, however, revealed that increasing numbers in upper, middle and lower income brackets were users of aerosol-packed merchandise.

WHERE DO THEY BUY? In reply to this question, purchasers of aerosols named more than 27 different types of retail outlets. Leading the list were drug stores (34.7%). Department stores were next (18.3%), followed closely by hardware stores (17.6%). Other outlets mentioned included food stores, service stations, dime stores and beauty shops.

what do they say about them? Reports covered a wide range of reasons why many customers (74.4%) were satisfied with their aerosol purchases. Some (3.9%) complained. Statements of satisfaction listed effectiveness, convenience and safety among important considerations. High cost, odor, and fear of possible danger to children or pets were topmost reasons for dissatisfaction.

WHICH SALES POINTS ARE MOST IMPOR-

TANT? Typical replies showed that lack of knowledge about aerosols . . . doubt that results would be good . . . and uncertainty of the safety of aerosols were major reasons why aerosols had not been purchased. These obviously represent sales points of outstanding importance to manufacturers of aerosol-packed products.





CONSUMER MARKET STUDY

Important Questions

Why People Buy... Why They Do Not

what's the trend? Definitely upward. The study proves that (compared with last year and the year before) more people now know about and are buying aerosols. More than 67% said they had seen aerosol advertising in newspapers, magazines, store displays or had heard radio announcements about aerosols. More people today plan to buy aerosol-packed goods in the future. The market is continuing to expand, and indications promise brisk business for some time to come.

ACCEPTANCE GROWING. Tabulations indicated that 45% of those who had heard of aerosols were familiar with one kind . . . insecticidal. 24% knew of two kinds and at least one respondent mentioned 14 varieties! In any event, as new kinds of aerosols—waxes, deodorants, paints, plastics, beauty preparations and others—appear on the market, they are quickly and enthusiastically accepted by the consuming public.

IMPORTANT FACTORS in aerosol-packed products are shown to be those pertaining to safety, effectiveness, convenience, cleanliness and freedom from odor. That is why by far the largest percentage of aerosol producers and packers wisely



use "Freon" safe propellents. These propellents are nontoxic, nonflammable, nonexplosive, practically odorless, and will not harm foods, flesh, fabrics, finishes or furs. For these reasons, they are ideal . . . offering what the consumer wants: aerosols that *are* safe.

digest of survey—Kinetic has prepared a digest of this important study. It is the only report of its kind available anywhere, and it should be extremely helpful to manufacturers, packers, distributors, retailers and, in fact, everyone interested in the production or sale of aerosol-packed products. To obtain a copy . . . write a memo today on your own letterhead to: Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington 98, Delaware.

"Freon" is Kinetic's registered trade-mark for its fluorinated hydrocarbon propellents.

SAFE PROPELLENTS

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NEW HIGH-PRESSURE Aerosol INSECT-O-BLITZ at Low Pressure Price!

For the first time this well-known Aerosol is NOW **AVAILABLE IN HIGH-PRESSURE!**

VALVE...Finger-tip control to end the hard work of moth proofing-opens and closes at the touch of the finger. Unique Safety-Lock feature prevents any loss or waste of pressure or fluid.

KILLING POWER ... High Pressure causes a much finer dispersion of these death dealing particles. They stay suspended in the air much longer and actually float into every crack and corner of the home-under furniture-behind curtains and drapes - to knock down and kill flying insects you can't even see. Kills more insects and kills them quicker-by actual laboratory test.

THE 100 % KILLER... Actual laboratory tests show the following results (complete report available on request)



Insect-O-Blitz High Pressure Bomb achieved 100% kill in 34 hours.





HIGH-PRESSURE AEROSOL INSECT-O-BLITZ KILLS 'EM QUICK AND SURE-MAKES OTHER LOW PRESSURE BOMBS OBSOLETE

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There are five standard sizes of Santochlor, each designed to fit your special needs, as follows:

 $No.\ 0$, approximately 14-inch pellets, for peach-tree borer control, insecticidal and miscellaneous uses. $No.\ 1$, approximately 14-inch nuggets, 16-inch n

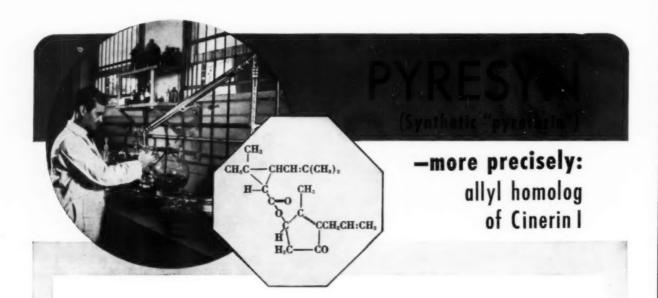
Whether you need Santochlor by the hundred-pound drum or by the carload, your order will get prompt attention at Monsanto. For quotations and technical information, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1767-C South Second St., St. Louis 4, Mo.

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Based on such preliminary work that has been done, it appears within the realm of probability that this new synthetic will find an important place in the manufacture of household, dairy sprays and aerosols replacing natural pyrethrum, at least to a substantial degree, because of its factor of economy.

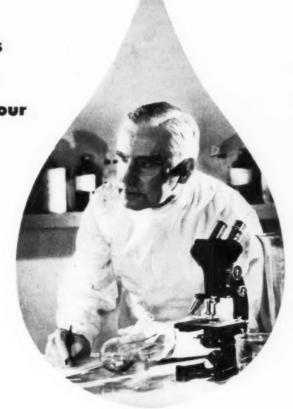
In some respects it can be rated as better than the natural, in others, as good as, and to be fair, in certain minor instances, a greater quantity must be used to attain comparable control.

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Furthermore, 25 and 50 gram experimental samples are available at 50¢ and 40¢ per gram respectively.



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Prove it in your own product: Submit your unperfumed fly spray and an indication of your perfuming budget to the MM&R Technical Service Dept. Deodor-Scented samples will be returned to you promptly.

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The insecticide enters the compression chamber, is combined with the proper amount of air—compressed and warmed slightly above room temperature—and the mixture is then further atomized as it is forced under pressure through a precision machined nozzle.

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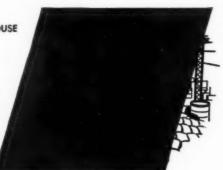
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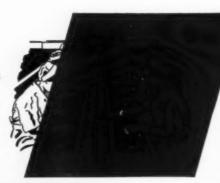
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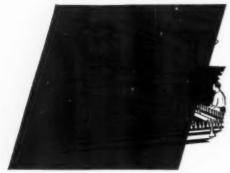
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It designates combinations of pyrethrins and
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Fast, positive knockdown and kill... time-saving convenience . . . freedom from toxicity, skin irritants and objectionable odors—such is the unique combination of advantages you can offer your customers when you base your areatype sprays on Pyrenones*. Use Pyrenones in your residual-type sprays too. They give a combination of safety, effectiveness and staying power that no other insecticide we've tested can approach.

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Want further information about Pyrenone Concentrates suitable for use in *your* insecticide formulations? We'll be glad to furnish it on request if you'll tell us briefly what type of insecticide interests you.

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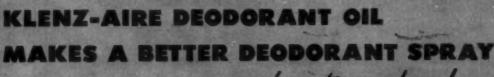
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Says Scotty



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This amazing product—which we firmly believe is the finest, most economical Deodorant Oil you could buy—combines with Formaldehyde and water to make a milky emulsion spray.

And here's the best news . . . Klenz-Aire Deodorant Oils-

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Imagine a finished spray for only 75c a gallon! A spray that kills all tobacco smells, cooking odors-destroys odors in public rooms, theatres, kitchens, apartment houses, rest rooms, schools, hospitals, taverns... and leaves a pleasant, fresh after-scent that people like!

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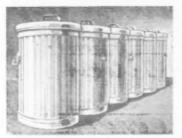
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SANITARY PRODUCTS SANITARY PROPUCTS SANITARY PRODUCTS

ALES of floor maintenance products and equipment for household use are expanding at a rate which to some observers indicates that the home market eventually may surpass industrial consumption. New and improved floor maintenance materials and equipment, some specifically designed for home use, are contributing to the enlarged interest in home floor care. As a result sales of waxes, steel wool, cleansers, soaps, floor machines and applicators show a sharp uptrend in the household market.

Other factors responsible for the growth of sales of floor maintenance products to homes include the current housing situation. Persons moving into new homes or apartments are exceptionally conscious of the appearance of the homes for which many have been waiting for years. Others, compelled to remain in present quarters, are trying to make the best of it by maintaining or improving their homes. With consciousness of making floors attractive being promoted through newspaper and magazine advertising and articles, sellers of floor maintenance materials find homemakers ever more receptive to buying and using these items.



ESIGNATED "allethrin," the allyl homolog of Cinerin I, or "synthetic pyrethrum," is now being produced for tonlot shipments. Thus, in a little over a year from the time of the first announcement of its synthesis, commercial production of this important insecticidal material has been achieved.

At a press conference held recently to announce the new coined name and to commemorate the first multi-ton commercial shipment of the material, some of the difficulties involved in its manufacture were listed. In the tricky, dangerous and expensive twelve-step process, a mil-

lion pounds of chemical solids and liquids, including water, are required to turn out 5,000 pounds of finished material. To date, only two companies are manufacturing "allethrin," with distributorships in the process of being set up.

The cost of the new material may appear to be somewhat high at present, but as in the case of most newly synthesized chemicals, probably will come down with improved production techniques and expanded output. That the material is available commercially in such a short time from its first appearance is a remarkable tribute to the engineers and chemists who did the job.

Although it has been and still is undergoing intensive testing to measure its true effectiveness, results are reported to continue encouraging even though variations are reported among groups doing the research work. So far the initial DDT pitfalls seem to have been avoided.



Public Health Service to approve the use of quaternary ammonium type disinfectants and sanitizers is a source of real concern to manufacturers of these compounds. What bothers manufacturers particularly is the fact that privately many of these officials are understood to praise the effectiveness of the quaternaries, but in their official capacities hold back in acting on their beliefs. As a result, municipal health authorities, quick to emulate the attitudes of Washington officials, are slow to broaden their sanitary codes to include quaternaries as recommended for use in public eating places.

The quaternaries are not "cure-alls," as even their makers are quick to admit. They are useful sanitation tools, and as such are worthy of consideration and possibly even approval for public health protection.

Rat Deterrents for Paper

By Jack F. Welch, James B. DeWitt, and Ervin Bellack * Fish and Wildlife Service

PART I

Proceeding World War II and since has increased importance been placed on the use of materials of this type as a means of reducing damage by rodents.

Even as early as 1932 the Biological Survey (now the Fish and Wildlife Service) undertook research in the reduction of damage by field mammals through repellent sprays and paints. The animals concerned included principally deer, rabbits, field mice, and tree squirrels—creatures that damage seed and seedlings in reforestation projects, shelter-belt plantings, farm wood lots, and orchards. Hundreds of compounds were studied.

In cooperation with the Forest Service, Soil Conservation Service, State Game and Fish Departments, and other organizations, tests were conducted in Montana, Louisiana, Texas, the Lake States, the Great Plains shelterbelt area, New York, and the New England States.

During this early period a rabbit repellent known as "96a" was developed.³ When applied to the bark of dormant trees this material is effective in preventing damage by rabbits and has been found of value in minimizing field mouse damage. Contributions were also made to our knowledge of repellents against porcupine, deer, and other mammals.

Repellents Studied in War

D URING World War II the study of repellents for commensal rats and mice and other animals that dam-

*Mr. Welch is with the Wildlife Research Laboratory, Denver, Messrs. DeWitt and Bellack are connected with Patuxent Research Refuge, Laurel, Md. age stored foods, communication lines and other vital goods was stressed. Under the auspices of the U.S. Army Quartermaster Corps, the search was begun for suitable repellent materials, which when applied to such Army subsistence packs as "10 in 1" ration and "K" ration, would minimize damage by rats. To facilitate the work a simple bioassay procedure to permit the rapid screening of large numbers of chemical compounds in the laboratory prior to field testing was adopted. This led to the current study which began in 1946 and about which this paper is primarily concerned.

The primary objective of this study is the development of a treatment for paper and fabricating materials which will prevent or minimize damage by commensal rodents to packaged goods while in storage. The protection offered may be due to physical properties such as hardness, toughness, tackiness, or grittiness, or it may be due to properties affecting the chemical senses, or to a combination of both. Examples of materials offering the first type of protection would be relatively impervious coatings formed by plastics, waxes, or resins. The second group includes chemicals which, because of their characteristics, cause animals to avoid them following initial contact. The materials must not be hazardous to

persons handling them nor contaminate food coming in contact with them.

Experimental Procedures

THE ultimate test of the efficacy of any material as a rodent repellent would involve measurement, or comparison, under field conditions of the protection against rodent attacks afforded by its application to test cartons or other packaging materials. However, since such tests are complicated, and require the expenditure of considerable time and effort, it would not be feasible to examine large numbers of materials in this manner. Little or no information concerning the possible composition of potentially successful repellents was available at the start of these studies, and it was necessary to examine large numbers of materials in a relatively short time. To expedite the work, it was decided to divide the study into three phases: a screening operation designed to eliminate the bulk of inactive materials; an intermediate step, in which the reaction of laboratory rats to papers treated with test compounds could be determined; and the final phase, a field test in which test cartons treated with the candidate repellents were exposed to attacks from wild

Food Acceptance Technique

This technique, designed to give information on the repellent ac-

³ Garlough, F. E., Welch, J. F., and Spencer, H. J.—"Rabbits in Relation to Crops"—Conservation Bulletin 11, U. S. Dept. of the Interior, Fish and Wildlife Service, 1942.

> A report of the study to develop a treatment for paper and fabricating materials which will prevent or minimize damage by commensal rodents to stored package goods.

Packages

J. S. Department of the Interior

tivity of large numbers of compounds, has been described in a previous publication.4 Laboratory rats weighing a minimum of 150 grams were housed in individual cages, and furnished water ad libitum. At the beginning of the test, each animal was provided with a suitable food cup containing 20 grams of a standard laboratory chow, and a similar cup containing 20 grams of similar food mixed with a small proportion (usually two percent) of the test material. No other food was available to the rats during the experimental period. The amount of food remaining in the cups was weighed each 24 hours during the four day experimental period, and the cups returned to the cages. The animals and any residual food were discarded at the end of the experiment.

In o.der to facilitate interpretation of the results, the relative degrees of repellent activity were expressed numerically by means of the formula:

K=100—(1/100W) (8T₁+4T₂+2T₂+T₃) (U₁+U₂+2U₃+4U+8X) where T₁ T₁ represents the daily consumption of treated food; U₁ to paper board of acceptance technical consumption (in grams) of the untreated food; X represents the residue of untreated food remaining at the end of the test period; and W represents the animal weight in kilograms. Compounds which gave an index of 85 or higher were considered sufficiently promising to warrant further study in the barrier tests.

Barrier Test Techniques

Although the results obtained by the food acceptance technique are indicative of degrees of repellency under such experimental exposure, they Photograph at top shows rat gnawing through a barrier of compressed rat food. Note

Photograph at top shows rat gnawing through a barrier of compressed rat food. Note that all material, except few crumbs on floor has been ingested. The cage used has a glass front. Lower portion of the illustration shows rat gnawing through a non-food (corrugated paper board) barrier. Here there is little if any ingesting of the material. Fragments of paper are torn loose, dropped to the floor and kicked backwards as the gnawing progresses. The reward for penetration is the food pellet.

did not establish the degree of deterrency which might be obtained

through the application of compounds to paper board containers. The food acceptance technique also fails to disclose materials offering physical resistance to rats, as incorporation of such materials may alter food acceptance but little. To evaluate the latter, other and more direct methods must be employed. To accomplish this, tests have been carried out with these and the more active chemical compounds resulting from the screening tests through the use of treated paper barriers placed between the animal and its food supply.

Following a procedure similar to that used by Stolurow,⁵ laboratory

and selected at random as to sex and coat color have been used in these tests. Experimental cages have been specially equipped so that a test animal could be separated by a treated paper barrier from food which serves as the goal or driving urge. Since rats are not equally active in their tendency to gnaw, they must be subjected to an intensive training period extending over a period of weeks prior to use to insure relative equivalence of performance both between animals and for the same animals in different tests. This has been accomplished by giving animals progressively more difficult barriers to penetrate to reach food until penetration of a standard barrier consisting of 10 sheets of Kraft paper laminated with synthetic latex is accomplished on repeated trials in 10 to 20 minutes.

rats weighing a minimum of 200 grams

Various methods for the con-

Bellack, E., and DeWitt, James B., Rodent Repellent Studies. 1. Method for the Evaluation of Chemical Repellents. J. Am. Pharm. Assoc., Sci. Ed. 38(2) 109-112 (1949).

struction of paper barriers have been used. The simplest of these is a single sheet of Kraft paper. More complicated barriers are built up of layers of paper laminated with a synthetic latex. Candidate chemical repellents may be added to the barrier by impregnation of one or more of the layers of the paper, by dusting on surfaces coated with an adhesive, or by coating the barrier surface with a solution or suspension of the compound in a binder. Physical repellents may be added by coating one or all of the layers of paper comprising the barrier.

To evaluate test barriers, food is placed at the back of the experimental cage, the barrier is inserted and a rat having been deprived of food overnight to increase its hunger drive is placed in the front part of the cage. The time of the animal's entry is recorded and where the barrier is not particularly difficult a constant check is maintained until the animal penetrates it sufficiently to reach the food. If the barrier is not penetrated within one hour, a fresh rat is placed in the cage. This is repeated until penetration is accomplished.

Where the barrier is difficult enough to require a large number of successive animals for penetration the tests are suspended in the evening and resumed the following morning with new animals.

The total time elapsed in minutes is then calculated. For each group of animals working on treated barriers (normally five of each type of barrier), a similar group is maintained on untreated "control" barriers which are identical in make-up except they contain none of the test material. The relative rates of penetration of the treated and untreated barriers give an indication of the efficacy of the test material as a deterrent.

Studies have also been carried out in which both the treated and untreated barriers were exposed simultaneously to a test animal. Though this has the advantage of direct comparison and permits a check on the gnawing activity of the rat, it has been found a less precise method where the differential in penetration time of the (Turn to Page 147)

Quaternative as

UATERNARY ammonium compounds, often spoken of as QACs or "Quats," are surface active materials. Basic to a discussion of quaternaries is a definition of terms and description of characteristics of surface active agents. These materials increase wettability of water by lowering its surface tension and its interfacial tension.

Surface active agents fall into three broad classifications: anionic, nonionic and cationic. QACs belong to the cationic division. We can clarify these designations by looking at their so-called structural balance. This is an equilibrium between the water attracting (hydrophilic) group and the water repelling (hydrophobic) group of the surface active material.

Sodium soap is a common example of the anionic group. In water solution part of its molecules ionize or dissociate into its chemical constituents. These are the sodium and fatty acid radicals shown diagrammatically

Diagram ANIONIC Surface Active Agent

- Figure 1-

The anion or negative group contains the surface active material and consists of the hydrophobic hydrocarbon chain and the hydrophilic carboxylate ion.

Place an oily or fatty material into a soap solution. At the interface, between the two liquids, an orientation — OIL — High

of the surface active agent (1) occurs.

No Surface Active Agent

We can illustrate this as:

Oil - Lowers
Water P Interfacial
Tension

- Surface Active Agent

Cationic and nonionic materials will function similarly when in solution. Cationic surface active agents of which QACs are examples, differ from anionic materials in carrying a positive electrical charge on the surface active portion of a dissociated molecule. This can be shown as:

Figure 3

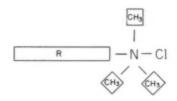


Diagram CATIONIC Surface Active Agent

____Figure 4___

This is the direct opposite to the electrical charge of the anionics.

Non-ionic surface active agents do not ionize. Their solubility depends on the equilibrium between a hydro-

^{*} Before the 36th annual meeting N.A.I.D.M., now Chemical Specialties Manufacturers' Assn., Washington, D. C., Dec. 5, 1949.



phobic fatty type group and a hydrophilic grouping of ether linkage and/or hydroxyl radicals. Trade named examples are "Triton x 100" and "Eshofat 242/25." The hydroxyl groups give water solubility to the material.

Thus chemically surface active agents are classified into anionic, nonionic, cationic and an amphoteric grouping which we are mentioning but not discussing. In industrial use, however, we will group them according to the functions they perform. This classification being:

- Detergents—agents which aid in cleansing dirt from surfaces.
- (2) Wetting agents—promote the spreading of liquids on surfaces.
- (3) Emulsifying agents which aid in dispersing immiscible phases in each other.
- (4) Bactericides—having ability to kill bacterial growth in water solution.

The various surface active agents are not interchangeable or equal in these industrial uses. Nonionics have no known lethal action on bacteria, whereas some of the cationic QACs are powerful germicides and the anionics are known to destroy some types of bacteria when conditions are favorable.

Quaternaries have notable germicidal action if at least one of the four radicals has a long carbon chain, such as Soya (a)-trimethyl quaternary ammonium chloride (2).

Quaternaries Are Bactericidal

UATERNARIES containing more than one long chain such as dicoco (b)-dimethyl quaternary ammonium chloride are also bactericidal. The added long carbon chain radical decreases the water solubility and increases the oil solubility of this material. This latter activity makes these materials of interest in keeping down active flora in oil wells. This flora is said to clog the porosity of the sand and slow up the flow of oil into the drill shaft. The well can be kept in full production over a longer period of time (4). They are also of value in oil spraying of fruit trees.

Several explanations have been advanced as to bactericidal action of quaternaries (2) such as the disruption of the cell membrane, inactivation of cell enzymes or inactivation of indispensable proteins. This paper will not weigh the merits of these theories. We will, however, present a technique of study developed by Eggenberger and Harwood (5) which throws some light on the mechanism of the toxic action by quaternaries. It consists of measuring the electrical conductance of bacterial sus-

pensions which are being treated with surface active agents. A curve of electrical conductance can be constructed graphically demonstrating that bacteria in the presence of a cationic surface active agent show an abrupt increase in solution conductance at the point where an almost complete kill occurs. (See Fig. 6 next

Graph (Fig. 6) presents a plot of the equivalent conductivity of alkylammonium chlorides in the presence of live Staph. aureus organisms. The upper curve represents the effect produced by "Soya" trimethyl ammonium chloride, a quaternary containing the alkyl chains found in soybean oils. It shows what can be termed apparent equivalent conductivity of the QAC in the presence of living bacteria. An abrupt hump in the graph is noted. This has been established as the point of nearly complete (99.9 ± per cent) kill. The lower curve demonstrates the effect of hexyl ammonium chloride with no hump in the curve. It was established previously that the quaternary salt was a powerful germicide and that hexyl ammonium chloride has little or no bactericidal activity. These curves show an increase in conductable solutes at the killing point. This would imply that either some of the cell contents have been released due to cell wall damage or that the organism releases a conducting material as a defense mechanism. In support of the defense mechanism view are results from electron micrographs. Staph. aureus organisms were killed by a cationic salt dodecylamine chloride. Electron-micrographs of these dead bacteria were compared with one of the living organisms. Some morphological change was noted

Diagram NONIONIC Surface Active Agent

soylean oil.

(b) the mixed fatty acid radicals secured from cocoanut oil.

April, 1950

⁽a) the mixed fatty acid radicals secured from soybean oil.

but no evidence of cell wall rupture could be seen.

Quaternaries are somewhat temperamental as killing agents for bacteria. Some problems presented by this sensitivity are still incompletely solved. The adverse effects are in part due to their cationic structure. These factors affecting the power of quaternaries are pH, temperature, presence of anionic material, adsorption, fat, protein, variation in bacterial species resistance and variation in kind of quaternary.

The QAC's property of adsorption has favorable and unfavorable factors. Dishes which have been sanitized with a quaternary rinse have a thin hydrophobic film quite firmly adsorbed on their surface. This film prevents water from draining or sheeting from the dish. In hard water areas the droplets of water isolated by the quaternary film, leave unsightly residual spots on drying. This film can be removed by a vigorous cleaning in an anionic detergent solution. It can be demonstrated that good drainage can be secured from some quaternary solutions. This drainage will be enhanced if nonionics are present. But if a dish from the quaternary solution is rinsed with clear water, the presence of the hydrophobic cationic film is immediately detected.

QACs are readily adsorbed on many other surfaces such as charcoal, bentonite, textiles, fats, etc. This property is of value or detrimental depending on the end use of the quaternary.

Quaternaries are inhibited in bactericidal power by protein materials. QACs form a complex with proteins which some authorities claim inactivates them as bactericides (2).

The pH of the quaternary solution has a pronounced effect on its bactericidal power, the optimum range being in alkaline mediums.

Anionic materials inactivate quaternaries by forming a fatty type complex. This can be visually observed by pouring a clear soap solution into a clear quaternary solution. The cloudy, less-soluble complex is plainly shown. An additional example is to use a clear solution of sodium carboxy methyl cellulose and the quaternary.



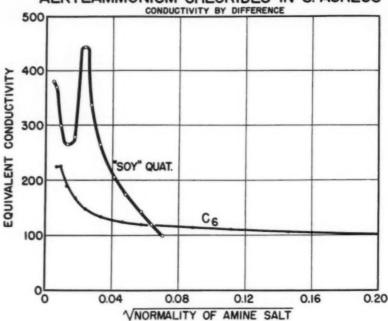


Figure 6

The controversial problems involved in chemical laboratory or field testing of QACs will not be reviewed in this paper.

QACs Use Dilutions Nontoxic

QUATERNARIES are considered relatively nontoxic materials in the dilutions which are considered

lethal to bacteria. Animal tests using white rats covering several generations have been conducted in which all the drinking water contained QACs (6). Dilutions used were 1:2,500 and 1:5,000 based on the dilution of the active quaternary. Attempts to use a higher concentration of an alkyl benzyl ammonium chloride were unsatis-

CATIONIC Surface Active Agent

Water droplet

Ceramic Surface

Diagram Showing Orientation of Quarternary

Hydrophobic group

Hydrophilic group

factory because the rats refused to drink it. Five colonies of rats were involved in this particular test, two on dodecyl benzyl ammonium chloride at 1:2,500 and 1:5,000 dilutions, two on soya-trimethyl ammonium chloride at the above concentrations and one control colony on tap water.

Results of this one test covering a 96-week period showed that the rats' reproductive powers were not markedly affected by the quaternary diet.

All animals receiving quaternary developed an avitaminosis like syndrome or symptom. This showed up as a pink-brown hood intensified in pregnant females.

During lactation all females on quaternaries developed further symptoms, including:

- Dermatitis of extremities and ears (acrodynia).
- 2. Whisker lesions and abscesses.
- Denuded paws and ventral throat area (alopecia).
- "Spectacled eye" (a hyperkeratosis of the conjunctiva).

A fair recovery from this syndrome was brought about using large doses of pyridoxin (B₆) and corn oil.

In the closing months of this test these symptoms disappeared and did not reappear either in the parents or offspring (6).

These results are not to be interpreted as a final answer on the toxicity of QACs in use dilutions. This test would indicate that quaternaries could be used, with proper precautions, in the food industry without deleterious effects. This is being done in certain areas where the local health code or health authorities permit its use. Memorandum 123 of the Bureau of Animal Industry provides the specifications for such a use for the packing house industries. As with many regulations this one in answering certain questions raises others.

Briefly this memo calls for thorough cleaning before the sanitizing quaternary rinse is applied and it calls for a clear water flush before re-use of equipment.

In the practical application of

quaternaries for industrial use, two approaches seem indicated, first as a detergent sanitizer and second as a sanitizing rinse. Application as a detergent sanitizer undoubtedly has the greatest number of difficulties to be surmounted. Such a sanitizer would probably have limited fields of application such as on dairy farms, where it is now being tried.

As has been indicated, wetting power and detergency are not synonymous terms. The QACs in general are poor detergents. They can be built or supplemented with materials which will fortify this lack of cleaning ability. Such materials must be compatible with the quaternaries. This automatically eliminates all anionic materials. The natural adjuncts a.e the non-ionics and such alkaline builders as have proved themselves compatible aids to detergency. Such balanced formulas are considered trade secrets as technical knowledge is needed in selecting and combining the various ingredients.

Detergent sanitizers usually consist of a quaternary ammonium compound of known germicidal power, a good non-ionic detergent, compatible phosphates and soda ash.

Muelle: (7) claims two salient points for the detergent sanitizers made with OACs.

- Makes cleaning and sanitizing a simple, single operation.
- Germicidal properties of the quaternaries are increased in detergent sanitizers.

Detergent sanitizers are not the perfect antidote to cover careless work or a cure all for sanitation problems. They must be used with common sense and reason. They should be used according to manufacturers' directions. Only reliable companies who can fully back up their claims should be considered as sources of supply. Adequate bacteriological policing should be carried out and intelligent housekeeping be considered of foremost importance.

A second major bactericidal use of quaternaries is as a sanitizing rinse preceded by thorough cleaning with good detergents and a good clear water rinse. Again the objections, such as lack of sheeting due to the cationic nature of the QACs, must be overcome

or overlooked in the use of the quater naries.

A helpful guide until a better one is devised on how to use quaternaries as germicides would be B.A.I. bulletin No. 123.

Progress in any field will not come if men stand by with fear and trepidation, thinking up reasons why we cannot make use of new knowledge or new products. Quaternaries are today at such a point. Recognition should be given of their possibilities and continued effort directed to solving the problems due to their peculiar properties. They then will be essential and valuable adjuncts in good industrial housekeeping.

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Monsanto Ups Winfield

The appointment of William H. Winfield as assistant to the president of Monsanto Chemical Co., St. Louis, was announced recently by William M. Rand, president. Mr. Winfield has been with the company as manager of the economic research department since Sept., 1947, and is continuing to act as economic advisor to the executive committee.

A new associate director and three assistant directors of the company's phosphate division research department were appointed Jan. 16 by Russell L. Jenkins, research director. The new appointees include: Charles B. Durgin, associate director; and Henry V. Moss, Edgar E. Hardy and Christian H. Aall, assistant directors.



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CHEMICALS AT FOR INDUSTRY

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Relation of Insects to Disease

By Dr. F. C. Bishopp*

Assistant Chief, Bureau of Entomology and Plant Quarantine
. Agricultural Research Administration
United States Department of Agriculture



NSECT - BORNE diseases are among the heaviest burdens carried by the people of the world. This is true today and has been down through the ages. DDT and other highly effective insecticides give promise of materially lightening this burden. Malaria, which has been rampant in this country since colonial days, is definitely on the way out. Epidemic typhus, which has caused the loss of more wars than poor generalship, is no longer dreaded by military men or civilian health authorities, with the potent louse-killer DDT at hand. Yellow fever has been whipped back into jungle areas through the wiping out of the yellow fever mosquito in Brazil and other parts of South America, and dengue can be stopped short by the prompt adoption of effective mosquitocontrol measures.

Although control of many diseases of man and livestock can be effectively combated, largely by the correct use of insecticides, people are often more interested in measures that will relieve them of annoyance from insects regardless of whether they carry disease.

While some insect vectors of disease might be controlled or eliminated by the proper use of insecticides, sole dependence should not be put on that method of control. Insects are so diverse in habits, so adaptive, and so prolific that every known control method should be employed simultaneously.

Sanitation is among the most important control measures. As a matter of fact, insecticides should never be substituted for cleanliness and other sanitary measures.

It is necessary also to recognize and observe other factors that impinge on the use of insecticides. One of these that has been brought forcefully to attention in recent months is the appearance of strains of insects-flies, mosquitoes, and mites-that are resistant to certain insecticides. Another important factor which imposes distinct limitations on the use of an insecticide is the acute and chronic toxicity to higher animals, including man. Necessary as is protection against possible toxic effects from the use of insecticides, there has been a tendency on the part of some persons to magnify this hazard and to ignore other more serious hazards from the presence of insect vectors of disease.

In a discussion of reasonable length it is not possible to treat in detail the many factors involved in controlling disease through insect repression. I shall merely try to point out some of the disease problems in which insects are a dominant factor and give a few examples of how in-

secticides are, or could be, used to relieve suffering, increase human efficiency, and generally improve the welfare of the people.

Mites as a Cause of Disease

ITES cause extreme discomfort L to man, livestock, and poultry and, in addition, carry certain specific diseases. Chiggers, or red bugs, are not only extremely anoying, but often, in cases of heavy infestation or susceptibility of individuals, produce fever and other generalized symptoms, sleeplessness, and secondary infections. Certain species of chiggers in Northern Australia, India, Malaya, Japan, New Guinea and other Pacific Islands, cause scrub typhus, or tsutsugamushi disease. This disease varies widely in virulence in different areas, the mortality ranging from two to 33 per cent among susceptible populations.

The use of repellents, particularly dimethyl phthalate applied to the person and in impregnated clothing, undoubtedly materially lessened the incidence of scrub typhus among our troops in the Pacific Area. These repellents became available in 1944 following the research at the Orlando, Florida laboratory of the Bureau of Entomology and Plant Quarantine.

Recent developments in insecticides are cited for their part in controlling or eliminating insect borne diseases of humans and animals.

^{*} Presented at the 36th annual meeting of the Chemical Specialties Manufacturers Assn., in Washington, D. C., on December 5, 1949.



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The practical method of impregnating clothing was devised in the field by R. C. Bushland. These same repellents are now effectually employed by many civilians in the South where chiggers abound, and have largely replaced sulfur as a protective agent.

Many yards, parks, golf links, and other areas where chiggers have caused so much annoyance heretofore can be freed of these pests through the application of toxaphene (two pounds per acre), chlordane (two pounds per acre), or lindane (one-quarter pound per acre).

One of the oldest afflictions of man is scabies produced by the itch mite. This malady still persists in all parts of the world; however, during wars it becomes more intense, widespread, and often troublesome for military authorities. The discovery during World War II of the efficacy of benzyl benzoate in destroying scabies infections and the value of Eddy's formula containing benzyl benzoate, DDT, benzocain and a wetting agent for eliminating both scabies and lice make available a ready means of controlling and ultimately eradicating scabies on human beings.

Mites related to the itch mite of man have been a cause of heavy losses among all classes of livestock. These infestations have been greatly reduced through quarantines and the persistent use of lime-sulfur and nicotine sulfate. However, the recent demonstration of the effectiveness of lindane, in eliminating the mites from an animal by a single treatment, gives added promise of the eradication of these pests from all livestock in the U. S.

The ability of the tropical rat mite to carry endemic typhus has been demonstrated, and another rat mite has been convicted recently by Huber and Pomerantz of carrying rickettsial pox of man in New York. Some of the bird-infecting mites, including the common chicken mite, appear to be concerned with the transfer of the virus of encephalitis to bird hosts. The destruction of rats and mice and the control of the mites in buildings through the use of insecticides may play an important part in reducing the incidence of these infectious diseases.

Ticks as Disease Carriers

ALL the numerous species of ticks known in the world are actual or potential disease carriers. Furthermore, they are annoying pests of man, livestock, and wildlife and are responsible for secondary infections. Death of livestock and some wild animals is not infrequently caused by exsanguination.

A number of tick species, as they suck blood, inject a sufficient amount of toxic material to produce paralysis. This malady is not uncom-

PART II of Dr. Bishopp's cricle, "The Relation of Insects to Disease," the first part of which is published on this and accompanying pages, will appear in our May issue. Insecticides used to control malaria bearing mosquitoes will be discussed, as will fly control programs, in which pesticides are employed to stamp out many diseases spread by flies.

mon in man, birds, fowls, dogs, and sheep, and sometimes results in death.

Many types of diseases are carried by ticks, including those caused by viruses, bacteria, rickettsia, and Protozoa. In Russia and Siberia a form of encephalitis is carried by the tick Dermacentor reticulatus (F.). Tularemia is transmitted by the American dog tick and other species; Q fever can be carried by ticks; Colorado tick fever and Rocky Mountain spotted fever are carried exclusively by them.

Bullis fever, rather recently diagnosed in troops at Camp Bullis, Texas, is apparently transmitted by the lone star tick. Relapsing fever of man has been recorded in a number of the western states, where it is transmitted by the bite of two or more species of the soft-bodied ticks of the genus Ornithodoros. A member of this genus, O. mouhata (Murray), is responsible for the transmission of the well-known tick fever of Africa.

The part that the cattle tick played in retarding agriculture in the South through the inoculation of all cattle with Texas or splenetic fever and the long and successful struggle

to eradicate it by dipping the cattle in arsenical solutions are well known. This same disease and its transmitting agent are widespread in Mexico, and Central and South America, and are responsible for tremendous losses. It and closely related diseases are prevalent in the Mediterranean region and other parts of the world, and constitute a serious obstacle to the successful development of the livestock industry. The greater efficacy and persistence of DDT, toxaphene, and mixtures of DDT and benzene hexachloride, as compared with arsenical dips, give reason to believe that the difficult job of controlling the tick in the Tropics and elsewhere will be successful.

Several species of ticks carry diseases of livestock and wildlife in Africa, including the dreaded East Coast fever and other forms of piroplasmosis. A serious disease of poultry called spirochaetosis, transmitted by the fowl tick, is widely distributed in the warmer parts of the world. This tick, which is especially abundant in the southwestern United States, also causes a form of paralysis in chickens and is a persistent and troublesome pest. Its control is materially simplified by the application to the poultry houses of DDT (2.5 per cent wettable powder), lindane (0.4 per cent), toxaphene (4.0 per cent), or chlordane (1.0 per cent).

The wide distribution in nature of the Rocky Mountain spotted fever tick, the American dog tick, the lone star tick, and a number of other disease-carrying species, together with their short engorgement periods, great longevity, and multiple hosts, makes their control very difficult and requires the employment of several lines of attack. Among these, insecticides play an important role. The treatment of livestock and pet animals with insecticides can be supplemented by area treatment, especially along paths and roadways where ticks such as the American dog tick are more or less concentrated.

concentrated.

Cockroaches as Disease Carriers

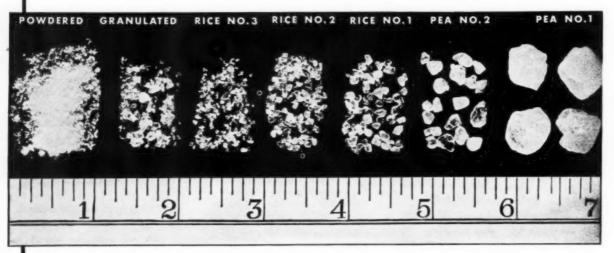
THE filthy habits of cockroaches give them abundant opportunity to play an important part in disease transmission. They contaminate foods

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with various germs and molds. A number of disease organisms, including those that cause cholera, tuberculosis, leprosy, and dysentery, have been found to pass unharmed through the digestive tract of roaches. Eggs of certain intestinal worms are also ingested by roaches and discharged in viable form; eggs of others hatch and pass through part of their growth cycle before they are discharged. Growth is subsequently completed in fowls or mammals.

The proper use of insecticides coupled with cleanliness has been shown to eliminate roaches and the hazards of disease and food losses associated therewith.

True Bugs and Disease

STRANGELY, the bed bug, world wide in distribution and intimately associated with man, has not been shown to be of importance as a disease carrier. It is greatly annoying, however, and produces marked dermatitis or allergenic reactions in some individuals.

DDT has largely solved the bed bug problem. Its effectiveness, ease of application, persistence, and economy would make the ultimate extermination of the bed bug entirely practical.

Throughout the warmer parts of the world, the so-called kissing bugs (Triatoma) are annoying biters, cause marked allergenic reactions in some people and, in the tropical Americas, transmit Chagas disease of man. These bugs live in association with domestic and wild animals, and hence are difficult to control. They can be killed with several contact insecticides, but where DDT has been used extensively in the control of mosquitoes and flies, as in Venezuela, the triatomas have become more numerous, probably because the insecticide has destroyed the lizards and other natural enemies of the bugs.

Stinging and Other Insects

THE serious reactions experienced by some people from the stings of such insects as wasps and ants, plus the interference with fruit gathering and other operations, often makes the control of these pests necessary. For instance in Florida the little fire ant frequently drives pickers of citrus fruit out of the groves, and the imported fire ant is causing serious losses and annoyance in the presently infested area in southern Mississippi and Alabama. The part that ants play in contaminating foods also must not be disregarded.

The stings of caterpillars such as the flannel moth larva, the puss caterpillar, and the brown-tail moth, and the blisters caused by contact with certain beetles often pose an important problem, demanding the spraying of shade trees and other vegetation upon

.........

The May issue of SOAP & SAN-ITARY CHEMICALS is to be a special issue for the annual meeting of the National Sanitary Supply Association. Copies will be distributed at the N.S.S.A. convention to be held at Hotel Stevens, Chicago, May 7-10. Articles for sanitary supply firms dealing with sales, new products and product application, and a full story of the meeting will be presented.

which these pests thrive. Many insecticides can be used in meeting these insect problems.

Mosquito-Borne Diseases

THE importance of mosquitoes as annoyers is generally recognized, but the extent to which this may interfere with highest human and animal efficiency is probably not fully appreciated. Dermatitis, blood loss, toxemia, and so-called worry all contribute to inefficiency even when no specific disease is involved.

Mosquitoes are solely responsible for several of the world's most dangerous and debilitating maladies such as yellow fever, dengue, encephalitis, and malaria. They are also responsible for the transmission to man of certain filarid worms that cause various disease manifestations including elephantiasis. Heart worm of dogs is another parasitic disease chargeable to mosquitoes.

Space will permit of the presentation of only a few examples of the part insecticides are playing in reducing disease incidence, relieving discomfort, and increasing efficiency by controlling mosquitoes. Drainage, screening, and repellents are used in combatting mosquitoes, but insecticides have held an important place in that field for years and with the advent of DDT and other chlorinated hydrocarbons they have come to be depended upon almost entirely.

Residual sprays have come into wide use so recently that few reliable figures on the effect of their use on disease incidence are available. The striking figures on reduction of the population of mosquito vectors, the decrease in the number of infected specimens, and the downward trend in disease incidence following an intensive antimosquito campaign, however, are reasonably convincing evidence of their beneficial natu: e.

Filariasis. Fortunately we have had only one small area in this country in which filariasis has ever been established. This mosquito-borne disease is an important problem in the tropical parts of the world.

H. W. Brown and R. W. Williams (1949) have reported results of the conduct of an island-wide program to cont: ol filariasis on St. Croix by destroying mosquito vectors with residual DDT sprays. Four applications to all houses reduced by 50 per cent the number of the southern house mosquito (Culex quinquefasciatus Say) in the houses and the number that harbored developing Wuchereria bancrofti, the human filarid. Apparently none of the mosquitoes lived long enough to become infective. During the spray p:ogram the infection rate in children dropped from 13.3 to 10.6 per cent. These operations also resulted in the complete elimination of the yellow fever mosquito from the houses.

Heart worm of dogs caused by Filaria immitis, which is carried by the yellow fever mosquito and perhaps other species, is found in dogs throughout the southern two-thirds of the United States. Many dogs are weakened by this parasitic worm and hunting dogs not infrequently drop dead on the chase, their heart action being interfered with by the mass of worms.

Dengue. The effectiveness of the systematic use of insecticides as a major weapon against dengue fever has been abundantly demonstrated. Earlier dreyer odors for insect sprays...



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control work involved the use of pyrethrum sprays, kerosene, paris green, and phenothiazine. More recently DDT and sesame oil and other synergists have come into wide use as supplements to pyrethrum. Aerosol and residual methods of applying insecticides have added to the efficacy and persistence of the results.

There is no doubt that the availability and wide use of insecticides in the Pacific theatre had a marked effect in increasing the efficiency of our military forces by reducing the incidence of dengue. In stopping outbreaks of dengue quick action is essential, as in the airplane spraying of Saipan in 1944 when the disease was decimating our forces (Hall 1945) and in Honolulu when that critical area was threatened in 1943 (Gilbertson 1945). In such cases the adult insect carriers, Aedes aegypti (L.) and A. albopictus Skuse, are destroyed, and less dependence is placed on larval control.

Yellow Fever. The terrible threat of vellow fever which hung over the Americas and other parts of the world has been largely removed by the development of an effective immunizing agent, of potent insecticides, and of knowledge of their use. Even though yellow fever is endemic in remote jungle areas in the Tropics, the key to success in preventing epidemics in populous areas is the control of the domestic Aedes mosquitoes that carry the disease. That these domestic carriers can be controlled or completely eradicated from large areas has been strikingly demonstrated in several South American countries.

This work has followed the general pattern developed in Brazil by that Government and the Rockefeller Foundation (Soper and Wilson 1942). Its success has been due not only to the availability of effective insecticides, but to the development of exacting administrative techniques and the intensive training of carefully selected personnel clothed with adequate au-

The results being obtained by our South American friends in eliminating the yellow fever mosquito puts us in an unfavorable light, since this

insect continues to be an annoying pest throughout much of the South and little is done toward holding it in check, let alone eradicating it. This species is so thoroughly domesticated that it is found only in close proximity to man and the larvae breed only in artificial containers. In addition, its inability to overwinter in cold climates and its susceptibility to insecticides should make the eradication of this mosquito practical. In Africa, the outlook is less promising, as Aedes aegypti has more silvan habits and several other mosquitoes with diverse breeding habits are efficient carriers.

Encephalitides. Mosquito transmission of several types of encephalitides, a group of virus diseases, is now well established. These types include eastern, western, St. Louis, Japanese B, and Venezuelan encephalitis. Mosquitoes have caused in the U.S. from 1930 to 1945 thousands of cases of encephalitis, with a good many fatalities to humans, and about a million cases and 300,000 horse and mule deaths.

Giltner and Shahan (1942) report that ten species of mosquitoes are capable of transmitting encephalitides in the United States. Hammon and Reeves (1948) reported a test of area control of Culex tarsalis Coq. with insecticides to determine their effect on the incidence of encephalitis. Immunity rates in chickens, and infection rates in mosquitoes were not markedly reduced. However, Dr. Hammon has stated in a personal communication that "There is every reason to believe, on the basis of well established factual evidence, that in certain of the hot valley areas of the Western States, control of Culex tarsalis and the more common Aedes species should effectively reduce the incidence of encephalitis of the Western equine and St. Louis types in man and horses."

Japanese B encephalitis, which appears to be distinctly more deadly to man than our American forms, is probably carried by a Culex mosquito. Several species, some of which are present in this country, have been found capable of transmitting the disease experimentally (Reeves and Hammon

Mosher (1947) has reported that, of the 91 cases of Japanese B encephalitis reported on Okinawa in 1945, 51 occurred in the northern area and only eight in the southern section. Large-scale mosquito-control operations, mainly DDT spraying, were carried on in the southern area while the control work in the north was less effective. He also reported that the epidemic on Heanza Shima subsided abruptly after the introduction of intensive mosquito-control measures.

Other virus encephalitides which affect man in Africa, such as West Nile virus, Semliki Forest virus, Mengo virus, and Bunyamwera virus, are probably carried by mosquitoes. This whole field of neurotropic virus diseases and the relation of insects to them is badly in need of further investigation.

(To be concluded)

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(Turn to Page 147)

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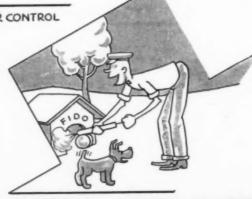
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Chlorinated Hydrocarbons...

By W. A. Gersdorff, R. H. Nelson and Norman Mitlin

U. S. D. A., Agr. Res. Adm., Bureau of Entomology and Plant Quarantine

RHE chlorinated hydrocarbons heptachlor, aldrin, and dieldrin have recently been reported to be highly toxic to insects. The chemical name of heptachlor is 1 (or 3a),-4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene; of aldrin (compound 118), 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,-8-dimethanonaphthalene; and that of dieldrin (compound 497) is 1,2,3,4,-10,10-hexachloro-6,7-epoxy-1,4,4a,5,6, 7,8,8a - octahydro - 1,4,5,8 - dimethano naphthalene. Experiments on the toxicity of these compounds to house flies when applied as space sprays have been described by Kearns et al. (1949). Similar studies by a different method are reported in this paper.

Although of technical grade, the materials tested were white crystalline solids of a high degree of purity. The melting points of these samples were 89-91°, 95-98°, and 173°C., respectively.

Because the compounds are related to chlordane, the chemical name of which is 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a - hexahydro - 4,7, - methanoindene, this insecticide was used as a basis of comparison. Two samples of technical chlordane from different commercial sources, both viscous liquids, and a sample of purified crystalline chlordane were tested. Concurrent tests were made with the mixture of natural "pyreth:ins" contained in a newly prepared commercial 20 per cent pyrethrum concentrate. Of the total "pyrethrins" in this product, 54 per The relative toxicity of heptachlor, aldrin and dieldrin to house flies when applied as space sprays using Campbell turntable method.

TABLE 1.-Relative toxicity to house flies of certain chlorinated hydrocarbons in

Series No.	Number of replicates	er Material	Concen- tration	Knock down in 25 min.	Mean - mor- tality in 1 day	Mean concentration causing 50% mortality	Relative as compa "Pyre- thrins"	
			Mg. per n	nl. %	%	Mg. per ml.		
1	2	Technical c						
		Sample A						
			1.00	8	99	0.33 ± 0.04	4.2	1.0
			.50	7	74			
			.25	11	33			
		Sample B						
			1.00	9	93	0.39 ± 0.05	3.5	_
			.50	11	70			
		II t la l	.25	6	20			
		Heptachlor	.50	14	100			4.0,
			.25	8	100	-		4.01
			.125	7	73			
		"Pyrethrins"			10			
		Lytethins	2.00	100	71	1.37 ± 0.16	1.0	-
			1.00	100	32	1.01 _0.10	2.0	
2	5	Technical ch	lordane					
		Sample A						
			1.00	10	84	0.520 ± 0.039	6.4	1.0
			.50	3	51			
			.25	6	12			
		Crystalline						
		chlordane		0	00	0 240 . 0 025		0.50
			1.00	9	66	0.743 ± 0.055	4.5	0.70
			.50 .25	6	28 11			
		Heptachlor	.40	0	11			
		neptaemoi	.25	4	93	0.119±0.009	28	4.4
			.125	5	45	0.113 _ 0.003	20	2.1
			.063	7	17			
		Aldrin	.000					
			.25	7	85	0.131 ± 0.010	25	4.0
			.125	8	45			
			.063	9	15			
		"Pyrethrins"	•					
			8.00	100	82	3.32 ± 0.25	1.00	_
			4.00	100	58			
			2.00	100	26			
			1.00	100	13			
0		Distanta						
3	8	Dieldrin	0.25	5	98	0.088±0.011	32	5.9.
			.125	1	74	0.0000.011	32	0.02
			.063	2	27			
		Aldrin	.000	2				
		* *****	.25	5	82	0.129 ± 0.017	22	4.0,
			.125	6	51			
			.063	3	15			
		"Pyrethrins"		-				
			4.00	100	63	2.85 ± 0.36	1.0	_
			2.00	100	36			
			1.00	100	17			

Estimated at 73 per cent mortality level.

Ratio calculated with aldrin as base of reference is multiplied by 4 to change base to technical chlordane (Sample A).

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cent were found by chemical analysis to be pyrethrin I and cinerin I.

Procedure

SPRAYS were prepared by dissolving the materials in refined kerosene at such concentrations that the mortality results would span the median point.

The tests were made by the Campbell turntable method on laboratory-reared adult house flies, Musca domestica L. Knockdown and mortality were determined in replicated tests with approximately 100 flies averaging three days in age in each test.

Since all the materials were not available at the same time, the tests were made in three series. So that a newly tested chlorinated compound could be compared directly with a compound of similar chemical structure, a previously tested compound of this group was used as a standard in series 2 and 3 in addition to "pyrethrins."

Results

The toxicity data are summarized in table 1.

To find the concentrations of materials causing 50 per cent mortality, the daily mortality results were plotted on log-probability paper and straight lines fitted graphically. The concentrations were then estimated from these lines. The standard errors of the means of these estimates were obtained from an analysis of variance of the logarithms of the individual values. The relative standard error for each series was obtained by multiplying the standard error expressed in logarithms by the natural logarithm of 10, which is 2.303. The standard e: rors of the arithmetic means as given in table 1 are the products of these and the respective means.

The relative toxicity of the compounds was obtained from the inverse ratio of the mean concentrations causing 50 per cent mortality, each compound being compared with the "pyrethrins" in its own series.

The "pyrethrins" differ so markedly in chemical nature from these chlorinated compounds that they may differ much in rate of increase of

mortality with increase in concentration. They may also differ in degree of variation of mortality with the resistance of different populations of flies. Therefore, the chlorinated compounds were also compared with technical chlordane (Sample A).

That the relative toxicity varies with resistance of different populations of flies is definitely shown in the tests with technical chlordane and the "pyrethrins" in series 1 and 2. In series 2 the flies were much more resistant to "pyrethrins" but only a little more resistant to technical chlordane than in series 1. This difference is shown by comparing not only mortalities but also the increase in the concentration required to cause 50 per cent mortality. For "pyrethrins" this increase was 2.4-fold, but for technical chlordane only 1.6-fold. Therefore, the better picture of the relative toxicities of the chlorinated hydrocarbons is presented when they are compared among themselves only.

It must be emphasized that these comparisons are made on the materials as space sprays; the method makes no attempt to evaluate their residual efficiency.

The two samples of technical chlordane were about equally toxic to house flies. However, crystalline chlordane was found to be about two-thirds as toxic as technical chlordane.

Heptachlor and aldrin were found to have about the same toxicity, each being about four times as toxic as technical chlordane.

Dieldrin was the most toxic of the group, being half again as toxic as aldrin and approximately 30 times as toxic as natural "pyrethrins."

The results with the chlorinated compounds are in substantial agreement with those of Kearns et al. (1949), which were obtained on house flies by a wind-tunnel method. They found heptachlor and aldrin to be about five times as toxic as technical chlordane, and dieldrin to be about twice as toxic as aldrin.

None of the sprays made with the chlorinated compounds caused appreciable knockdown.

Literature Cited

Kearns, C. W., Carl J. Weinman, and George C. Decker. 1949. Insecticidal

properties of some new chlorinated organic compounds. Jour. Econ. Ent. 42 (1): 127-134.

BHC Synthesis

Benzene hexachloride is prepared by passing a benzene film countercurrent to chlorine in a vertically set glass tube, exposing the reactants to sunlight. A by-product of the synthesis is heptachlorocyclohexane.

The BHC yield based on the chlorine used may be increased by cooling the reaction column from the outside or using a chlorine saturator. The saturator is made of an inner and outer tube, both of dark brown glass for preventing the instant reaction of benzene and chlorine in the saturator, and is attached to the top of the reaction column. Benzene and chlorine are charged together into the saturator, where the chlorine is dissolved and saturated in benzene; the saturated benzene then runs over the inner tube and pours down into the reaction column, where it is exposed to sunlight, whereupon the benzene reacts with the chlorine. Both the outer cooling method and chlorine saturator effect good yields of the gamma isomer of BHC. Botyn-Kagaku Japan, 14: 20-23, 1949.

Moth-Proofing Compound

Wool treated with Na,S,O4, which replaces the disulfide linkages with bis-thioether linkages, is totally indigestible to moth larvae, and is thus moth-proof. Larvae may be killed also by fluorides and fluosilicates. However, these compounds are soluble in water, and therefore not suitable for clothes. The most satisfactory added substances are "colorless dyes," having the chemical properties of dyes, but not affecting the color. "Eulan CN," "Lanoc CN," and "Mitin FF" are in this class, and are fast to warm water. Discovery 10, 318 (1949) through Chem. Abs.

Toxicity of DDT

DDT is toxic to mammals if in a solvent that favors absorption by the skin; it is toxic to insects in all solvents. Tests on rabbits indicated toxicity at concentrations of five per cent in benzene benzoate; DDT was

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Merchants Bank Bldg., Indianapolis 4, Indiana 800 Fifth Ave., New York 18, N. Y. • 2513 S. Damen Ave., Chicago 8, III. not toxic to the rabbit in solutions of liquid petrolatum, which does not penetrate the skin. *Ann. Pharm. franc.* 7, 101-4 (1949), through *Chem. Abs.*

Caterpillar Larvicides

Aerial spraying of DDT dissolved in Diesel oil gave excellent kill of fourth stage or younger caterpillars, under favorable weather conditions, in pine and spruce forests. The procedure is much cheaper and more satisfactory than dusting at ground level. A. Ulrich, Z. Weltforstwirt. 13, 20-7 (1949); through Chem. Abs.

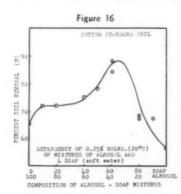
DDT Sabadilla Mixtures

Residual films of mixtures of DDT in 50 per cent wettable powder, and 50 per cent lime-activated sabadilla wettable powder were tested for knockdown of houseflies, tarnished plant bugs, and alfalfa plant bugs after 0, five, 10, 20, and 30 days. The effects of the mixtures were greater than the sum of the effects of the components. Residues from high concentrations of DDT lose little of the effectiveness during 30 days; those from low concentrations do. The effectiveness of sabadilla diminished after five to 10 days. J. T. Medler and H. E. Thompson, J. Agr. Research 78, 641-6 (1949).

Alkylolamides in Soap

(From Page 40)

In the case of potassium oleate (Figure 15), the addition of small amounts of the alkylolamide to the soap appears to be of no advantage in soft water. Excellent results are ob-



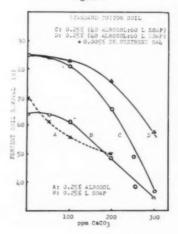
tained, however, with mixtures containing 20-50 per cent soap and 80-50 per cent alkylolamide.

Finally, in the case of stearate soaps (Figure 16), very outstanding detergency is obtained using 40-60 mixtures of fatty alkylolamide and soap at 20°C. Similar results are also obtained at 60°C. but are not as striking inasmuch as the soap itself shows an increase in detergency when used by itself. (The commercial soap used was made from a mixture of 80 per cent tallow and 20 per cent coconut oil.)

The improvement in hard water detergent properties of high titre soap by addition of alkylolamide is indicated in Figure 17. The detergency of the 40-60 mixture is considerably better than for either ingredient alone. The addition of ethylenediamine tetraacetate improves the cleaning action of the mixture at high degrees of water hardness; similar results might be expected with other builders.

These results are considered of some significance because stearate soaps, otherwise very fine detergents, suffer from two handicaps: (a) poor detergency at low temperatures; (b) poor detergency in hard water. Combining fatty alkylolamide with stearate soap represents at least one solution to this problem. There are many cleaning processes which must be done at low temperatures; this is particularly true in the sanitary chemical field where thin films of aqueous detergent solutions must be used as in washing floors, walls and other stationary sur-

Figure 17



faces, in spraying, etc., where cooling is rapid.

IV. Emulsification

Fatty acids are useful in emulsions when combined with alkylolamides where it may be desirable to suppress the strongly hydrophillic properties of the latter. For example, an oil in water emulsion composed of 90 parts mineral oil and 50 parts water, containing 0.5 per cent of alkylolamide will separate in 20 minutes; the addition of 0.05 per cent oleic acid, increasing the total emulsifier concentration to 0.022 per cent based on total emulsion will produce an emulsion stable for more than a month.

V. Soap Clarification

Alkylolamides are very effective in preventing turbidity of liquid soaps where this condition is due to the presence of poorly soluble stearate and palmitate. In Figure 18, the appearance of 20 per cent potassium soap (composed of 90 per cent coconate and 10 per cent stearate) at 40°F., with and without the addition of a small amount of alkylolamide, may be compared. Similar results at low temperature may be obtained even with high quality coconut soap. Used in conjunction with organic sequestrants, the alkylolamides appear promising in eliminating the need for refrigeration and storage of liquid soap prior to packaging.

Figure 18



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Optical Bleaches

(From Page 49)

creasing at 20 launderings and may continue for many more. In the case of some optical bleaches, it is found that undesirable color "builds up" on the cloth after a number of launderings. Ultraviolet measurement of fluorescence intensity is probably the best way to determine whether the fluorescence intensity is still increasing at any prescribed number of launderings. However, a more critical test for undesirable build-up of color is daylight evaluation.

Equilibrium Exhaustion

Equilibrium exhaustion refers to the percent of optical bleach which has been removed from the water when no further exhaustion occurs. There are many factors which influence the equilibrium exhaustion. Therefore, tests for this property should be conducted under the conditions of general usage in soaps and detergents.

Leveling Properties

Leveling may be defined as the process of distributing the optical bleach uniformly on the fabrics being washed. Good leveling results when the optical bleach is readily affixed to the fabric and also readily released during the washing operation. This release and subsequent redeposition continue until a uniform distribution of optical bleach is obtained. A good leveling optical bleach is desirable if a uniformly white fabric is to be produced. Another result obtained with a good leveling optical bleach is the exchange of bleach between old cotton materials which have accumulated a considerable amount of optical bleach during their many washings and new materials being washed for the first time. As a consequence, in a single wash a new fabric may acquire as much optical bleach as it would have acquired in several washes had it been laundered alone.

Hypochlorite Stability

Stability to chemical bleaches such as hypochlorite, is important because it is a very common practice in

household laundering to use a chemical bleach. When the optical bleach is destroyed by the hypochlorite, the expected improvement in whiteness will not be obtained. In addition, if the optical bleach is decomposed by the hypochlorite, the degradation products may contribute an undesirable hue. Thus in a hypochlorite test, it is necessary to look for both decreased intensity of fluorescence and for the accumulation of a decomposition product of undesirable color.

Substantivity to Various Fibers

It is important to know whether a particular optical bleach will treats all kinds of textile fibers effectively. Fluorescence after rinsing is a measure of effective substantivity of an optical bleach to a given kind of

Other Properties

There are, of course, other application and fastness properties not included in this discussion which may frequently warrant independent study. Some of these properties are, 1) light fastness, 2) wash fastness, 3) rinse fastness, 4) hot-pressing fastness, 5) gas-fading fastness, 6) perspiration fastness, 7) stability in the soap or detergent on ageing, 8) stability of washed fabrics to ageing, 9) rate of exhaust, and 10) effect of optical bleach on color of dyed fabrics.

Optical bleaches are colorless dyes that fluoresce blue when they are affixed to textile fibe:s and illuminated with a light source containing ultraviolet light. They impart added whiteness to most off-white products by the double effect of neutralizing the yellow coloration common to most off-whites and increasing the apparent reflectance of white light. In addition, they improve the appareance of blues, violets, purples, pinks, and other colored fabrics that benefit from a reduction of the yellow component. They have a negligible effect on yellows, oranges, reds, and browns.

Optical bleaches are found in many different chemical classes having diverse properties. The most important characte: istics are, absorption

in the ultraviolet, fluorescence in the visual, water solubility or dispersibility, fiber substantivity, and certain stability requirements, such as hypochlorite resistance.

Some of the important color and application characteristics are strength, shade, build-up, equilibrium exhaustion, and leveling properties.

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Transparent Soaps

(From Page 98)

a clean cloth moistened with alcohol.

In discussing the final texture of transparent soaps, Silman (13) remarks that this characteristic is determined by the usual tests. If too much water is present, the addition of a small amount of soda ash will produce firmness. Too much should be avoided because it may cause opacity by providing centers for crystallization. He advises that graining may be rectified by adding castor oil until the soap is closed.

Transparent soaps can be made by means of more-or-less standard cold and semi-boiled processes. In their new text, Thomssen and McCutcheon (8) present five formulas for producing soaps of different quality and appearance by the semi-boiled or cold processes. The full-boiled process is also used to some extent.

Cold Process Also Used

LARGE amount of the less expensive transparent soap is made by the cold process. Many formulas for making soap by this method are available in the technical literature. Indicative is Martin's classification of cold process soaps based on the ingredients used to impart transparency. These include soaps made with (a) castor oil and sugar, (b) castor oil, sugar and alcohol, (c) castor oil, sugar and glycerine, (d) alcohol and glycerine, (e) sugar and petroleum. A final category includes a number of miscellaneous recipes. Details on each category are provided in his text.

In a more recent report, Vallance (18) has cited the following procedure for making a small batch of transparent soap by the cold process:

Coconut oil (Cochin) 56	lb.	
Tallow, edible 56	lb.	
Glycerine, pure 23		
Caustic soda solution		
(38°Be.) 56	lb.	
	lb.	

The oil and fat are melted together at 130°F, and strained into a small, steam-jacketed kettle. Then the glycerine and caustic soda solution are crutched in. The alcohol is added subsequently. The batch must be mixed intimately, the kettle is then covered and allowed to remain for about one and one-half hours. Saponification takes place and, on completion, the soap is filled into narrow frames and allowed to cool rapidly. When quite cold throughout, the blocks are stripped and are allowed to stand exposed for a few hours before slabbing.

Another illustrative formula for making transparent soap by the cold process is given by Hurst (7), as follows:

Stearic acid	60 lb.
Coconut oil 11	0 lb.
Castor oil 4	10 lb.
Caustic soda solution	
(70°Tw.) 10	00 lb.
Alcohol 12	0 lb.
Sugar 4	10 lb.
	4 gal.
	0 lb.

The stearic acid and the oils are melted together. The caustic soda solution is stirred in with good mixing and the mixture is allowed to stand for a few days. The soap thus made is mixed with the alcohol and the mixture is heated until a clear transparent liquid is obtained. This operation is best conducted in a still connected with a condenser in order to recover as much of the alcohol as possible. During this stage the saponification is completed. When a transparent mass is obtained, the glycerine and the sugar (made into a syrup with the water) are added to the soap. The mass is now ready to be framed. When set up, the soap is cut into tablets which are placed for a time in a cool, dark room. During this period, the residual alcohol gradually evaporates away, the soap hardens and a more complete transparency is obtained.

Semi-boiled Method Used Most

THAS been said (8) that the semiboiled method is the process most generally used to make transparent soaps. Here again many formulas are available for making soaps by this method. Typical is a filler-containing formula, given by Fisher (6), which calls for the use of:

													1	parts
Tallow .			 	×			×	*				*		5.0
Coconut	oil	*			,	×	×	,	,	*	×			5.0

Castor oil	5.0
Caustic soda solution (66°Tw.)	7.0
Sugar	3.0
Water	3.0
Sodium silicate solution	
(44°Tw.)	1.5
Soda crystals	1.5
Alcohol	3.0

The oils and fats are melted and filtered into a steam-jacketed pan. At a temperature of 100°F., the caustic soda is added. After about one hour, during which the mass is stirred occasionally, the soap will be formed. The other ingredients, except the alcohol, are added at the same temperature as the soap mass, care being taken to keep the temperature of the whole process as low as possible. The silicate solution is added first and thoroughly mixed in. This is followed by the melted soda, the solution of sugar and water and finally the alcohol; all additions being made gradually, in a thin stream and with thorough stirring. Finally add the desired perfume or color.

The soap is now quite thin and may be run into frames. When cold, and solidification is complete, the soap may be stripped and cut into suitable pieces. After cutting, the tablets may be stored, either on open racks or in a heated room. The temperature must not exceed 75°F.

Another formula for a "medium grade" transparent soap to be made by the semi-boiled process is given by this authority as follows:

Tallow														,			parts 75
Coconut																	
Rosin W	W									*					*		50
Caustic	sod	a		(6	8	7	r	W)		*				*	100
Alcohol										*		,		×		*	80
Sugar .			*	,						×	×	×	ĸ	*			40
Witneson																	40

F. A. Attect Transparency

A S PREVIOUSLY mentioned, Thomssen and McCutcheon (8) have noted that transparency in a soap may depend on the percentage of fatty acids present and upon the number of times the soap is milled. To illustrate this principle they suggest that a suitable charge may consist of 75 per cent tallow (very low in free acid), 20 per cent coconut oil and five per cent W.W. or W.G. grade rosin. The saponification and finishing are carried out as with a full-boiled



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soap. This soap is placed in a jacketed vessel which is equipped with live steam coils and the excess water is evaporated from the soap until it contains 73 per cent of fatty acids. At this stage the thick mass is framed. When rapidly cooled, this is suitable for producing a semi-transparency, which now depends upon the number of times the soap is milled. No further additions are made to the soap.

Of pertinent interest is the report of the Russian investigators (11) who found that transparency can be produced in a soap by mechanical deformation. Thus they found that a transparent, hard, milled soap can be obtained without the use of alcohol by repeated milling and plodding (e.g. from five to six times). It is essential, however, that during these operations the temperature of soap should not exceed the upper limit of stability of the vitreous form. It was noted that the transparency, color and hardness of the soap are controlled by regulating the working temperature. Fineness of milling is also important.

Similarly indicative is the information provided in a British patent (19). Here it was explained how transparent soaps of high fatty acid content (e.g. 70 to 75 per cent) are made by saponifying the usual mixtures of fats; all being of a high degree of purity. The resulting transparent hot, almost neutral soap is then applied to cooled rollers in such a way that, in a few seconds, the temperature is reduced from 90 to 100°C. to about 20°C. The ribbons thus formed are scented, milled once or twice on cold rollers and are then passed through a slowly operating press or plodder with a cooled head. The resulting "string" or "rope" of soap is cut and formed into pieces of the desired size and shape. It is claimed that the soap made by this method is extremely transparent and is suitable for immediate shipment. On storage, the soap dries without alteration in shape.

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Relationship of Insects

(From Page 135)

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Rat Deterrents

(From Page 124)

two barriers is a matter of minutes as has been the case when testing some materials. Where the treated barrier is resistant enough to prolong penetration for a period of hours or days, this method has application.

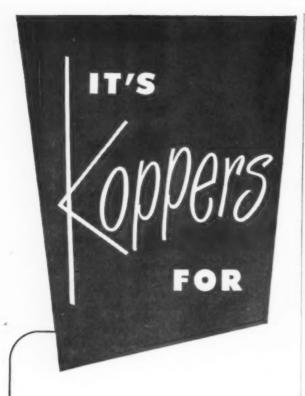
Experiments have also been conducted with barriers having a 1/8th inch hole made in the center of the panel to provide a gnawing surface for the animals. This technique has been found advantageous in appraising barriers having considerable physical resistance. Its value lies in the fact that it simulates conditions often found in the field where rats would normally have a gnawing edge (a corner or edge of a shipping box or carton) on which to make their attack.

(To be concluded)

Detergent Development

(From Page 47)

gent solution, about one horsepower hour of energy is used to displace 8 to 16 ounces of dirt. Research is now in progress to improve the mechanical efficiency by using ultrasonic vibrations. Such procedures may ultimately come into use to improve laundry operation efficiency, but it is not to be expected that they would ever be used to supplant detergent solutions.



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TRADE NEWS

Franklin Shifts Umsted

Louis F. Umsted, formerly manager of sales in Seattle for Franklin Research Co., Philadelphia, was recently appointed West Coast man-



LOUIS F. UMSTED

ager of sales. He is making his headquarters in Los Angeles.

In his new post, he supervises the firm's sales activities in Washington, Oregon, California, Montana, Utah, and Arizona. In addition, he is responsible for the operation of the company's subsidiary sales offices and warehouse in Seattle, Salt Lake City, San Francisco and Los Angeles.

Mr. Umsted has been with the firm since 1944, and was transferred to Franklin's Seattle offices in 1947, following his appointment as regional manager.

ASTM Wax Group to Meet

Plans for the formation of a wax committee within the American Society for Testing Materials will be discussed Apr. 14, at A.S.T.M. head-quarters, 1916 Race Street, Philadelphia. Dr. J. I. Hoffman of the Bureau of Standards is acting as temporary chairman for the organizational meeting, and Bayard S. Johnson of Franklin Research Co., Philadelphia, is temporary secretary. At the meeting it is hoped to elect a permanent chairman, vice-chairman and secretary. At that

time, too, the scope of the committee is expected to be defined.

Wax industry representatives, government people and wax consumers are being urged to attend. The first formal meeting of the committee will probably be held in June.

Gulf Advances Welsh

T. B. Welsh, formerly assistant manager of the specialty department of Gulf Oil Corp., Pittsburgh, has just been appointed sales manager. In his new capacity, he is directing sales of specialty products and is cooperating with Gulf Research Laboratories in the developing and testing of insecticides and related products.

R. L. Chambers, formerly supervisor of specialty sales in the Pittsburgh area, has been named assistant sales manager of specialties.

New Sonneborn Division

American Oil and Disinfectant Corp., wholly owned subsidiary of L. Sonneborn Sons, Inc., New York, is now known as Whistlelean division of the parent company, it was announced recently by Rudolf G. Sonneborn, secretary-treasurer. Joseph A. Lichterman, formerly general manager of American Oil and Disinfectant, continues in charge of the new division.

Fernald Joins Powell

The appointment of Charles P. Fernald, formerly export manager



CHARLES P. FERNALD

of Verney Corp., New York, as assistant export manager in charge of John Powell International Sales, New York, was announced recently. He has been connected for a number of years with the export field, in which the Powell company is currently expanding its activities.

Hoyt Acting BEPQ Chief

Avery S. Hoyt, who has been acting chief of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washing-

DR. P. N. ANNAND



ton, D. C., in the absence of the late Dr. Percy N. Annand, chief, has been designated to continue in the post, it has just been learned.

Dr. Annand, died Mar. 29 of a heart ailment after an illness of several months. He was 51. One of the leading authorities in the U. S. on the subject of insects and insect control, Dr. Annand entered the Agriculture Department in 1929. He has been chief of the Bureau of Entomology & Plant Quarantine since Aug. 16, 1941.

A native of Telluride, Colo., Dr. Annand was graduated with a B.S. degree from Colorado Agricultural College where he specialized in entomology. He received an M.S. degree in entomology from Leland Stanford University in 1922 and a Ph.D. in zoology and botany from the same school in 1928.

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C.S.M.A. Meets June 12-13

The major share of attention on the program for the mid-year meeting of the Chemical Specialties Manufacturers Association at the Hotel Drake, Chicago, June 12 and 13. Discussions in the form of papers and panel presentations will cover new developments in insecticides, aerosols, sanitation, waxes, and methods of evaluating quaternary ammonium compounds. In addition, recent advances in synthetic pyrethrum (now known as "allethrin"), insect resistance to insecticides, antiseptic liquid soaps are scheduled for consideration.

The general program committee for the meeting includes, Melvin Fuld, Fuld Brothers, Inc., Baltimore, chairman; John Rodda, U. S. Industrial Chemicals, Inc., New York, vice-chairman; Joseph A. Green, Standard Oil Company of Indiana, Chicago; C. L. Weirich of C. B. Dolge Co., Westport, Conn.; H. W. Zussman, Alrose Chemical Co., Providence; H. R. Shepherd, Connecticut Chemical & Research Co., Bridgeport, and H. D. Lederer of R. M. Hollingshead Corp., Camden, N. J.

Ira P. MacNair, MacNair-Dorland Co., New York, is in charge of arrangements, and the entertainment committee is composed of James E. Ferris of Niagara Alkali Co., New York; C. R. Lichtenberg, Chicago Sanitary Products Co., Chicago, and Herbert Wendell of Hercules Powder Co., Wilmington, Del.

Registration will begin on Sunday, June 11, in the Association suite. The meeting opens officially the following morning with a general session, at which reports of the various officers, including that of Leonard J. Oppenheimer of West Disinfecting Co., Long Island City, N. Y., president of C.S.M.A., will be given.

Divisional meetings begin on Monday afternoon, and continue through the following morning. Unfinished business will be taken up at a post-luncheon session on Tuesday afternoon.

In addition to group luncheons on both Monday and Tuesday, the reception and banquet take place on Tuesday night, June 13. Thus far, a speaker has been indicated for the luncheon on Tuesday only.

Syn. Pyrethrum "Allethrin"

Announcement of the coined name "allethrin" to designate the Allyl homolog of Cinerin I, or "synthetic pyrethrum," was made at Boyce Thompson Institute for Plant Research, Yonkers, N. Y., before a group of representatives of the press and the industry, Mar. 16.

The event was jointly sponsored by the Institute and Carbide & Carbon Chemicals Division of Union Carbide and Carbon Corp., New York. It marked the beginning of the shipment of the synthetic toxicant in commercial quantities by U.C.C.

Besides U.C.C., U. S. Industrial Chemicals, Inc., New York, is believed to be the only other manufacturer. U.S.I. announced in March that it had acquired foreign patent rights covering the manufacture and synthesis of the pyrethrin-like chemicals. Distributing the U. C. C. "allethrin" are S. B. Penick & Co. and John Powell & Co., New York, and McLaughlin Gormley King Co., Minneapolis.

H. B. McClure, vice-president of Carbide & Carbon Chemicals Division, described the steps that have led up to the commercial production of allethrin. S. A. Rohwer, assistant chief, Bureau of Entomology & Plant Quarantine, U. S. D. A., also spoke.

New York Aerosol Meeting

A meeting of a group of manufacturers and fillers of aerosol products was held at the Hotel Commodore, New York, Mar. 28, to consider labeling requirements under the New York City Fire Department Administrative Code. The meeting was held to consider also alternative tests to those of the Code for testing aerosol products. Recently it has been indicated that the New York Fire Department might consider aerosols as combustible mixtures, requiring changes in labeling.

A meeting of interested parties was called for April 6, by E. G. Young, chairman of the scientific committee of the Aerosol Division of the Chemical Specialties Manufacturers Association, to be held in Wilmington. At that meeting, those attending were to submit data and indicate any laboratory participation that they might be able to give. At the meeting a procedure for working out an alternative test was also to be set up.



Boyce - Thompson Institute technician selects cage of flies for insecticide test. Each cage contains approximately 500 flies reared in jars shown at left. Only four to five day old flies are used in tests.



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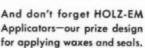


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N.S.S.A. to Meet May 7-10

BASED on advance registrations and pre-convention expectations, the 27th annual meeting and merchandise show of the National Sanitary Supply Association, to be held May 7, 8, 9 and 10, at the Stevens Hotel, Chicago, will be the largest and best attended yet.

According to Leo J. Kelly, executive vice-president of the N.S.S.A., the 1950 affair is being referred to as the "Treasure Chest Convention," which is being adopted also as the theme. In addition to one complete floor of sanitation chemicals and equipment exhibited by over 160 manufacturers, the convention will feature a clinic on the selection and training of sales personnel. Association business, including the election of officers and the presentation of reports of N.S.S.A. officials, will be taken up at general discussion sessions following luncheon on Monday and Tuesday, May 8 and 9.

A showing of the N.S.S.A. produced film, "The Cleaning and Maintenance of Soft Floors," is planned for the Monday afternoon session. Ways to use the film effectively will be taken up following its showing, as will suggestions for the improvement of future Association films.

The program for the four day convention and merchandise show calls for registration from 8 a.m. to 5 p.m. on Sunday, May 7. Exhibits will be open from 9 a.m. to 7 p.m. on Sunday. The following day the exhibit floor is open from 9 a.m. to 12:30 p.m. and from 4:30 p.m. to 10:00 p.m. The group luncheon is set for 12:30, and will be followed by a discussion session, ending at 4:30. On Tuesday, May 9, the exhibit floor will be open from 9 a.m. until 12:30 p.m. only. Luncheon at 12:30 precedes a discussion meeting which runs until 4:45 p.m., at which time the meeting is adjourned preparatory to the banquet at 7 p.m. The exhibit hall is open from 9 a.m. until 2 p.m., on Wednesday, May 10, the final day of the meeting.

Besides information that may be gleaned at exhibitors' booths, merchandise prizes are being offered. When distributor members of the Association register, they will be given five numbered keys, one of which matches the number on some prize displayed at a booth. In addition, and as a further step in carrying out the "Treasure Chest" convention theme, a "Mr. X" is going to circulate among the crowd every day. The 25th person to shake his hand and identify him correctly will receive from him a \$100 bill.

Among other convention features is an entertainment program for women guests. Details are to be announced shortly.



Norman R. Downey (above) has recently joined the toxaphene service group of Hercules Powder Co., Wilmington, Del., as a technical representative. He has been with the firm since 1942, and previously was a sales serviceman for the explosives department of the company.

Barnett Reilly Sales Head

Reilly Tar & Chemical Corp., Indianapolis, has announced recently the appointment of J. H. Barnett, Jr., as general sales manager, with head-quarters in Indianapolis. He has been in charge of the company's plant in Chattanooga since 1936, and in addition has been southern district sales manager for the past several years.

Carl M. Black Dies

Carl M. Black, formerly of S. B. Penick & Company's Chicago office, died in San Diego, Calif., Mar. 11. He had been a mid-western representative of Penick for 25 years.

New "Tornado" all-purpose floor machine below announced recently by Breuer Electric Manufacturing Co., Chicago, features new replaceable brush rings. Method of attaching brush has been simplified. To introduce new "Nebulizers" hand sprayer, H. D. Hudson Manufacturing Co., Chicago, recently announced the two-in-one deal, to retail for 49 cents.





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No heat is required, no rosin, no caustic soda or other chemicals.

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With either of these Nopco bases, you have only to add pine oil, stir (at room temperature) until a uniform mixture is obtained, and then add water. It's as easy as that. No special technical knowledge or equipment is necessary.

And the finished disinfectants are not only effective germ killers but, being brilliantly clear, are attentiongetters that make powerful appeal at the point of sale.

Nopco 1444—is a clear, light amber liquid base, designed to carry 4 parts of pine oil. Soluble pine oils prepared with this base are emulsifiable in either warm or cold water in all proportions. Phenol coefficients of 2, 3, 4, 5, and 5-plus are easily obtained.

Albasol AR—is a special highly concentrated emulsifier, somewhat darker than Nopco 1444. It possesses unusual carrying power for pine oil and blends readily to produce brilliantly clear disinfectants. Formulas giving phenol coefficients of 2, 3, 4 and 5 are easily compounded.

Profit by writing us today for full details about these exceptional Nopco bases that permit you to produce top quality disinfectants at low cost and in the simplest manner on record!

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New Continental Can Office

Robert S. Hatfield, formerly assistant to the vice-president in charge of sales of Continental Can Co., New York, was recently appointed district sales manager of Continental's new Milwaukee sales office, located at 735 N. Water St. Assisting Mr. Hatfield are Ray W. Caldwell and L. J. McNally, sales representatives, who are handling their former accounts in the Milwaukee area, and are making their headquarters in the new office there instead of Chicago. Charles W. Robertson, sales office manager and James H. Smullen, sales order correspondent, likewise have been transferred to the new office.

Moth-King Vaporizer

An electrical vaporizer for saturating clothes closets with a moth and carpet beetle repellent was announced recently by Moth-King Corp., Detroit. The unit, trade marked "Moth-King," is about four inches high, and is the same size in diameter at the base. It volatilizes cakes of paradichlorobenzene at controlled temperatures.

Miller Joins Dawson

Ray P. Miller, formerly of the Stored Products Insects Laboratory, U. S. Dept. of Agriculture, Manhattan, Kans., recently joined J. Carl Dawson & Associates, industrial sanitation firm of St. Louis, as a preventive sanitation consultant. Mr. Millard is a graduate of Kansas State College, where he received special training in engineering and entomology.

New Spray Unit

A new type spray unit that can be used for insecticides, disinfectants, deodorants, etc., was announced recently by Quadrant Garden Hose Spray, Ltd., Cumberland Road, Stanmore, Middlesex, England. The atomizer-type unit is designed for attachment to caps of bottles or cans not more than seven inches deep. A hole is punched in the cap and the atomizer tube is inserted. It is fastened to the cap by means of nuts that turn on the threaded tube and hold the under-

side and top of the cap between them. A short separate plastic tube 1s then fitted on the end of the tube and inserted in the bottle or can containing the liquid. The spray is emitted from a hole under the rim of the upper portion of the unit that is activated by squeezing a bulbous rubber top.

CCDA Award to McClure

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Harry B. McClure, divisional vice-president of Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corp., New York, was recently named as the recipient of the first Commercial Chemical Development Association Honor Award. He received the award scroll at a banquet highlighting the annual meeting of the Association held at the Roosevelt Hotel, New York, Mar. 22.

Hoffman to Aid Bishopp

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The appointment of Dr. Clarence H. Hoffman to serve as assistant to Dr. F. C. Bishopp, assistant chief in charge of research work, Bureau of Entomology & Plant Quarantine, U. S. Dept. of Agriculture, Washington, D. C., was announced recently.

Dr. Hoffman will assist Dr. Bishopp in planning, directing and developing many of the research functions and activities relating to insects and their control.

Oswald Forms Pulva Co.

F. Elmer Oswald recently announced the formation of Pulva Co., 550 High St., Perth Amboy, N. J., for the manufacture of a complete line of impact precision type pulverizers for granulating, wet milling and fine grinding. Formerly Mr. Oswald was sales manager and director of Pulverizing Machinery Co., Summit, N. J., with which he had been associated for 23 years.

Chi. Trade Fair Aug. 7-19

The first United States International Trade Fair will be held in Chicago, Aug. 7-19. Plans for similar shows in Atlantic City, N. J., and Detroit, have been withdrawn.

New Plastic Sponge

A new, all plastic sponge, said not to be affected by mild acids, alkalies, washing compounds or soaps, has been developed and was announced recently by Barco Chemical Co., New York. It comes individually wrapped in cellophane and is available in two sizes: large, $6\frac{1}{2}x4x2\frac{1}{2}$ inches, and small, $6x3\frac{3}{4}x2$ inches.

Safe Parathion Handling

An illustrated folder detailing instructions for safe handling of parathion by formulators, distributors and customers is now available from Monsanto Chemical Co., St. Louis.

New Room Deodorizer

A new room deodorizer that contains triethylene glycol is now being distributed by Chartiers Drug & Chemical Co., Pittsburgh. The item is being marketed under the brand name, "Spray Bokay" and is mildly perfumed. Distribution is through grocery, drug, and department stores.

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New Britton Dispensers

Resumption of production on its automatic dispensers for feeding cleaning compounds in dishwashing machines was announced recently by Wm. M. Britton Co., 8610 Graham Ave., Los Angeles 2. The company is now producing "inside" and "outside" models, in which improvements are said to have been made. Among these changes are adjustment of regulating disks on the bottom of the container without removing or loosening of screws. In addition, on present models the bottom pan does not drain out when the dishwashing machine stops. This saves cleaning compounds and the dispenser starts feeding instantly when the machine starts again. Besides, a more regular rate of feed is obtained.

Du Pont Names Fungicide

The trade-mark "Melsan" has been adopted by E. I. du Pont de Nemours & Co., Wilmington, Del., for its fungicide and bactericide for preventing blue stain and surface mold in lumber, it was announced recently.

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Hercules Expands in Dallas

Expansion of the activities of its Dallas, Tex., office to include sales of its Naval Stores products was announced recently by Hercules Powder Co., Wilmington, Del. Since it was opened in Aug., 1948, the Dallas office handled sales and technical service for toxaphene insecticide base material. The office is now handling sales of turpentine, pine oil, rosin and resin derivatives, which, like toxaphene, are derived by Hercules from the southern pine. P. J. Reno is manager of the office which is located in the Gulf States Building. The Dallas office services accounts in Arkansas, Louisiana, Oklahoma and Texas.

BEPQ Insecticide Report

A report on new and improved insecticides and methods of application was issued recently by Dr. P. N. Annand, late chief of the Bureau of Entomology & Plant Quarantine, U. S. Dept. of Agriculture, Washington, D. C. Dealt with in the report are the development of new insecticides and new methods of controlling insects; improvements in equipment, especially with regard to the use of aircraft in

large-scale operations, and the application of measures to provide more adequate protection to the U. S. against foreign pests. The toxicity of various new insecticides and insecticidal formulations when applied to livestock was studied in cooperation with other interested agencies. Insecticide resistant houseflies, found in many areas, were investigated and replacement materials for those showing reduced effectiveness against flies were studied.

Lehn & Fink Net Is Off

A decline in its net earnings for the six months of 1949, as compared with the comparable period in 1948 was reported recently by Lehn & Fink Products Corp., Bloomfield, N. J. In the period ended Dec. 31, 1949, a net profit of \$247,011, or 61 cents a share was reported, as compared with \$378,557, or 94 cents a share in the 1948 period.

Montreal San. Prods. Fire

An explosion in the benzene and turpentine storage tanks of Montreal Sanitary Products Manufacturing Co., Montreal, Canada, following a fire, recently destroyed the two story brick building housing the firm.

New Lambs Wool Applicator

"Knitspred," a new lambs wool applicator pad, which features uniformly woven, wool fabric backing, was announced recently by Fuld Brothers, Inc., Baltimore. By having the lambs wool uniformly woven into a wool fabric backing it is claimed possible to have uniformity of pad, pliability, even spread of the fluid, full absorption, and restretchable shape.

Form Pilgrim Chemical Co.

Pilgrim Chemical Co., New Orleans, chemical and cleaning compounds, filed articles of incorporation with the office of secretary of state at Baton Rouge, La., early in February, listing capital stock of \$20,000.

Floor Maintenance Manual

The American Hotel Association has just announced publication of a "Floor Maintenance Manual" prepared by York Research Corp. of Connecticut, Stamford. The manual is divided into two sections: Part I, Maintenance of Hard-Surfaced Floors; Part II, Evaluation of Water Emulsion Waxes.

New Georgia Law

The state of Georgia recently passed an economic poisons law (H.B. 608), which requires all non resident manufacturers, mixers, jobbers or distributors of insecticides, rodenticides, fungicides, etc., and devices to appoint an agent in the state in order to do business there. A mimeographed form to be signed by those applying for registration of products has been issued. Fee is \$5 for each brand and product, any number may be registered for payment of annual fees aggregating \$200.

Aromatic Prods. Moves

Aromatic Products, Inc., recently announced removal of their main office to 15 E. 30th St., New York.

"The mopping stroke should be that which gives maximum coverage and speed with the least fatigue and the highest quality performance," according to the narration in the new film of the National Sanitary Supply Association, Chicago. The new film is titled, "The Care and Maintenance of Soft Floors," which includes such floors as rubber, asphalt tile, linoleum, etc. Film is distributed through members of the National Sanitary Supply Association.



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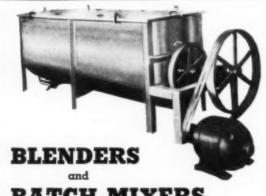
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H-A, 1500, 3000, 4000, 5000 lbs. capacity. Steam Jacket Crutch-

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Foot Presses.

2, 3, 4, 5 and 6 roll Granite
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Dryers.

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Screw Plodders.
Allbright-Nell 10 inch Plodders.

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Filling and Weighing Machine for
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Automatic Soap Wrapping Machines.

Glycerin Evaporators, Pumps. Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch. Perrin 18 inch Filter Press with

Jacketed Plates, Gedge-Gray Mixers, 20 to 6000 lbs. capacity, with and without

Sifter Tops.

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Schultz-O'Neill Mills. Day Pony Mixers. Gardiner Sifter and Mixer.

Proctor & Schwartz large roll
Soap Chip Dryers complete. Dopp Steam Jacketed Soap crutchers, 1000, 1200 and 1350

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All types and sizes-Tanks and Kettles.

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Salesman: Waxmaker wanted by old established firm in the New York City area. Furnish references and salary desired. Address Box 171, c/o Soap.

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Soap Development Engineer: Large soap manufacturer has fine opportunity for Chemical Engineer with experience in modern synthetic detergent plant handling sulfonation, sulfation and spray drying. Give full details of education, experience, age, and salary in first letter. Address Box 178, c/o Soap.

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Chemical Manufacturers Attention: Have practical experience formulating oil and wax emulsions, employee supervision, warehousing and packaging finished product, Address Box 174, c/o Soap.

Chemical Engineer: Twenty years' experience, engineering and production in soap and allied fields desires position of responsibility. Address Box 180, c/o Soap.

Chemical Engineer: With wide and varied plant design experience in soap, synthetics, fatty acids and glycerine desires permanent position or will consider limited engagement on consulting basis. Address Box 181, c/o Soap.

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Will purchase Immediately: Pneumatic Packaging Machine, used for chips, powder, cleanser; also dry mixers, chip dryers, crutchers, and automatic soap press. Address Box 177, c/o Soap.

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BY JOHN W. McCUTCHEON (36 PAGES)

Reprints of the above article as it appears in current issues of Soap & Sanitary Chemicals are available from the author as a 36-page leatherette-covered booklet. The article consists of a review of the history, type and production of synthetics, their outlook and a list of over 700 trade name synthetic detergent and surface active products listed in alphabetical order. Each product is identified by manufacturer, class and formula, main uses, form, percent concentration, type and special explanatory remarks.

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D-12 Meets

(From Page 81)

proposal of W. G. Morse's National Association of Purchasing Agents, N. Y., to present Mr. F. Smithers, retiring chairman of the committee, with a scroll expressing the thanks of the members of the committee.

Beetle and Moth Conference

A conference on the recognition and control of carpet beetles and clothes moths, sponsored by the American Museum of Natural History and the Professional Exterminators Association, will be held April 28 and 29 in the American Museum of Natural History, New York.

The conference is open to all pest control operators, exterminators, fumigators, etc., but the number of registrants is limited to seventy-five. The purpose of the conference is to familiarize those attending with the identification of the various stages of the insects causing damage, their habits and latest methods of control. There will be demonstrations of the proper methods of applying sprays and dusts. The first day of the conference will deal with reports on the carpet beetle, while papers on the second day will deal with the clothes moth.

Derris in New Location

Derris, Inc., suppliers of rotenone derris and cube powder and oil concentrates, has moved its New York headquarters from 75 to 120 Wall St. The telephone number, HAnover 2-1580, remains the same.

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Standard Knapp No. 429 Carton Sealer, 10 & 18 ft. Compression Units.

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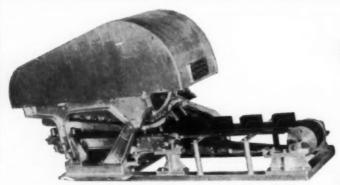
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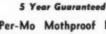
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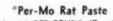
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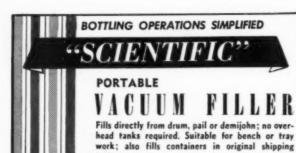
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36	180/185	8 max.	8 max.	30-35	85-95
1035	195/200	2 max.	21/2 max.	NII	NII

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NEW YORK

TALE ENDS

HEN Colgate has a strike, that's news! For the first time in the almost 150 year history of Colgate-Palmolive-Peet Co., some two thousand of its plant workers at Jersey City went out for one day last month. Actually, we hear, the workers took the day off to attend a union meeting. Anyway you look at it, the "strike" was of short duration and was settled for a five-cent hourly wage increase. Steel, auto and coal industries please note!

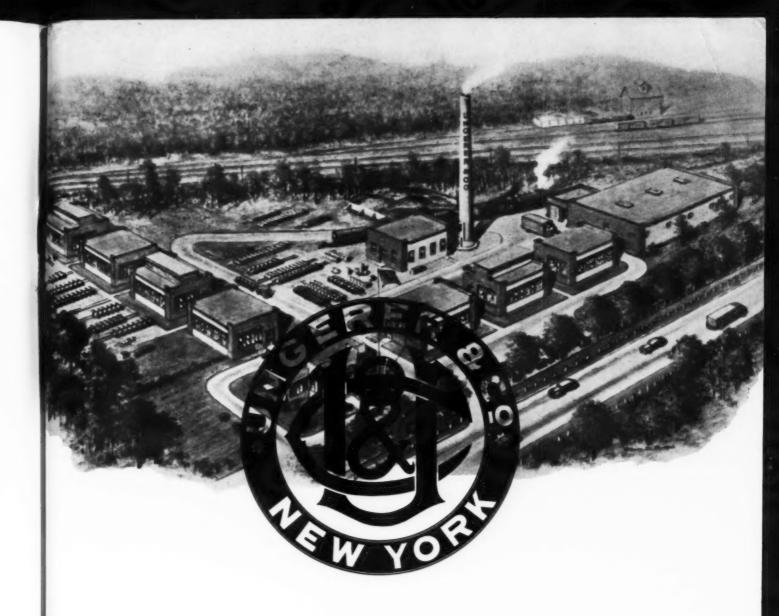
Entomologists tell us that 1950 is going to be a big bug year! Flies, mosquitoes, moths, termites, — they will be with us this summer in profusion. And nothing sells insecticides like lots and lots of bugs. When the bugs are around, it doesn't seem to matter whether the price is 29c or 59c per pint. People buy, Reports are that insecticide manufacturers' mouths already are beginning to water!

Thanks to Zello Chemical of Shelby, Ohio, and also Corkins Chemical of Cincinnati for their kindness in supplying back copies of SOAP to G. H. Wood & Co. of Toronto to replace missing issues needed to complete their files for binding. Our stock of the issues was exhausted; we called for help, and Zello and Corkins answered. Nice cooperation, gentlemen, which is deeply appreciated all around.

About half of the top brass of the American chemical, drug and allied trades were among the two thousand attending the annual DCAT dinner in N, Y, last month. Notable was the fit of many of the tuxedos worn. Tight. Outstanding was the prez of the Huntington Laboratories from out Indiana way who in a rush to dress arrived at the dinner adorned in tuxedo and red woolen socks. Hal Green of Sonneborn, DCAT chairman, did a neat job of presiding under difficult conditiors. Those who were able to observe, reported it a good party.

Ed Huisking, head man for Conti Castile, recently announced the arrival of a baby girl in his family, — the fourth girl, no boys, — in a unique manner. Instead of cigars, Ed handed out pencils on which was neatly inscribed. "Huisking's Home for Small Girls."

For moth control, Boyle-Midway's "Black Flag" insect spray with 5% DDT was selected as the "best buy" (39c pint retail) from a list of insecticides recently tested by Consumers' Union, New York, as published in their Consumer Reports. "Black Flag" is today probably the oldest name for household insecticides' in continuous use in the U. S. Originally the product was pyrethrum powder, the liquid being marketed later. Some years ago, Boyle-Midway bought "Black Flag" from the Gilpin (Baltimore) estate.



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